IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

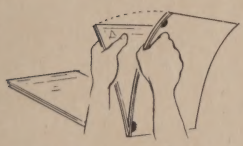
TO OPEN ***JUST DO THIS:***

1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 487 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ JUNE 1960

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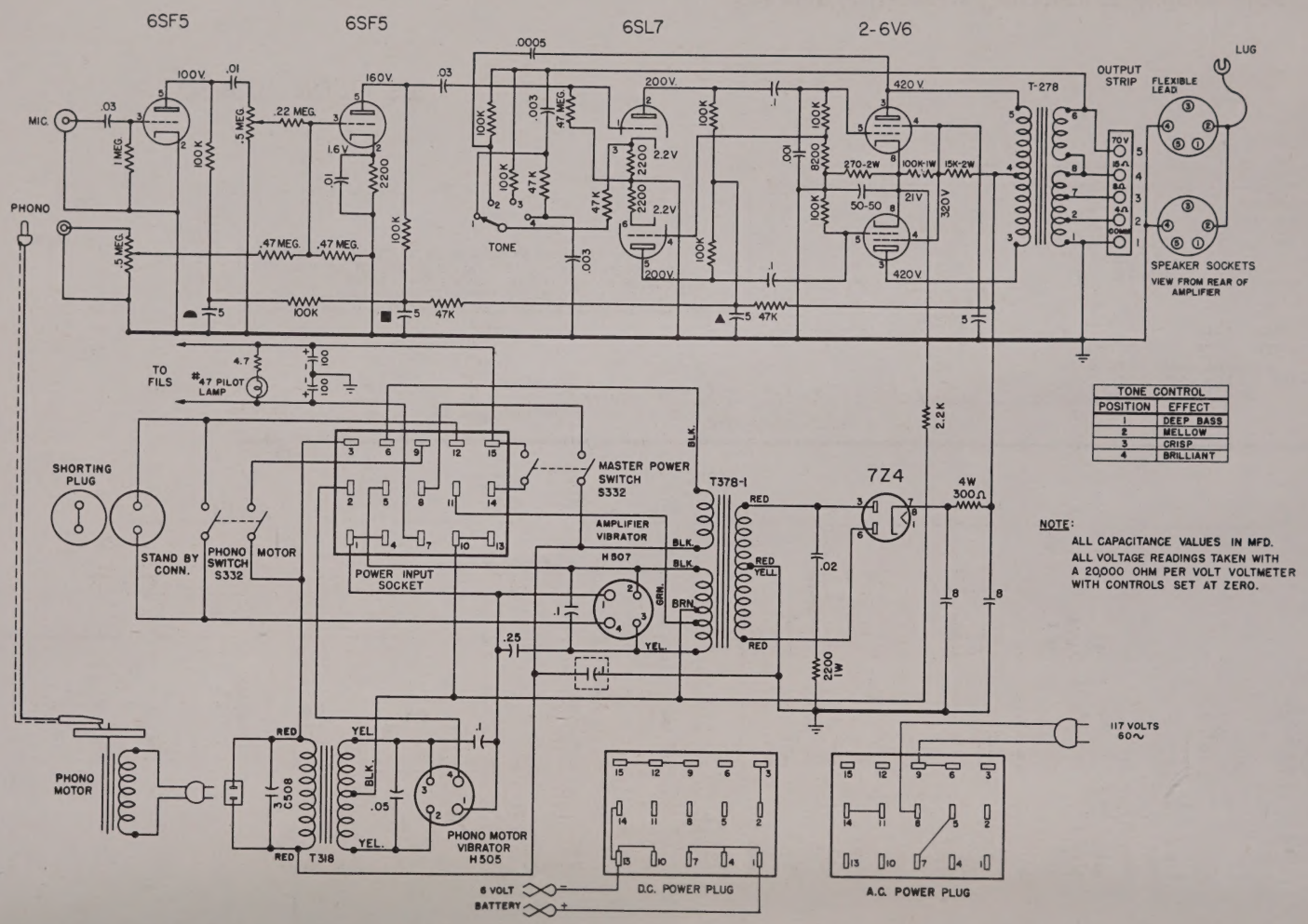
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Challenger Model CH618

Penney's Model 1966

Webcor Model 300

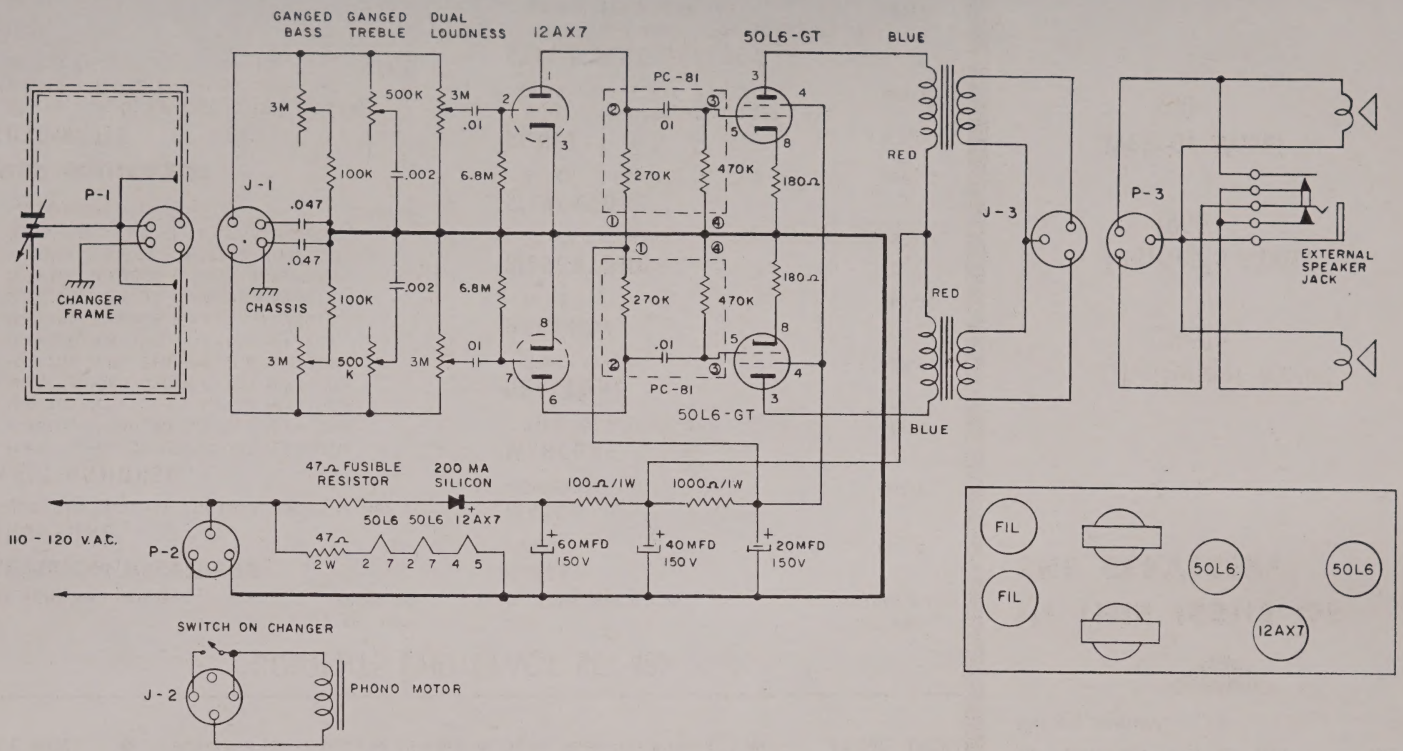


TONE CONTROL	
POSITION	EFFECT
1	DEEP BASS
2	MELLOW
3	CRISP
4	BRILLIANT

NOTE:
ALL CAPACITANCE VALUES IN MFD.
ALL VOLTAGE READINGS TAKEN WITH A 20,000 OHM PER VOLT VOLTMETER WITH CONTROLS SET AT ZERO.

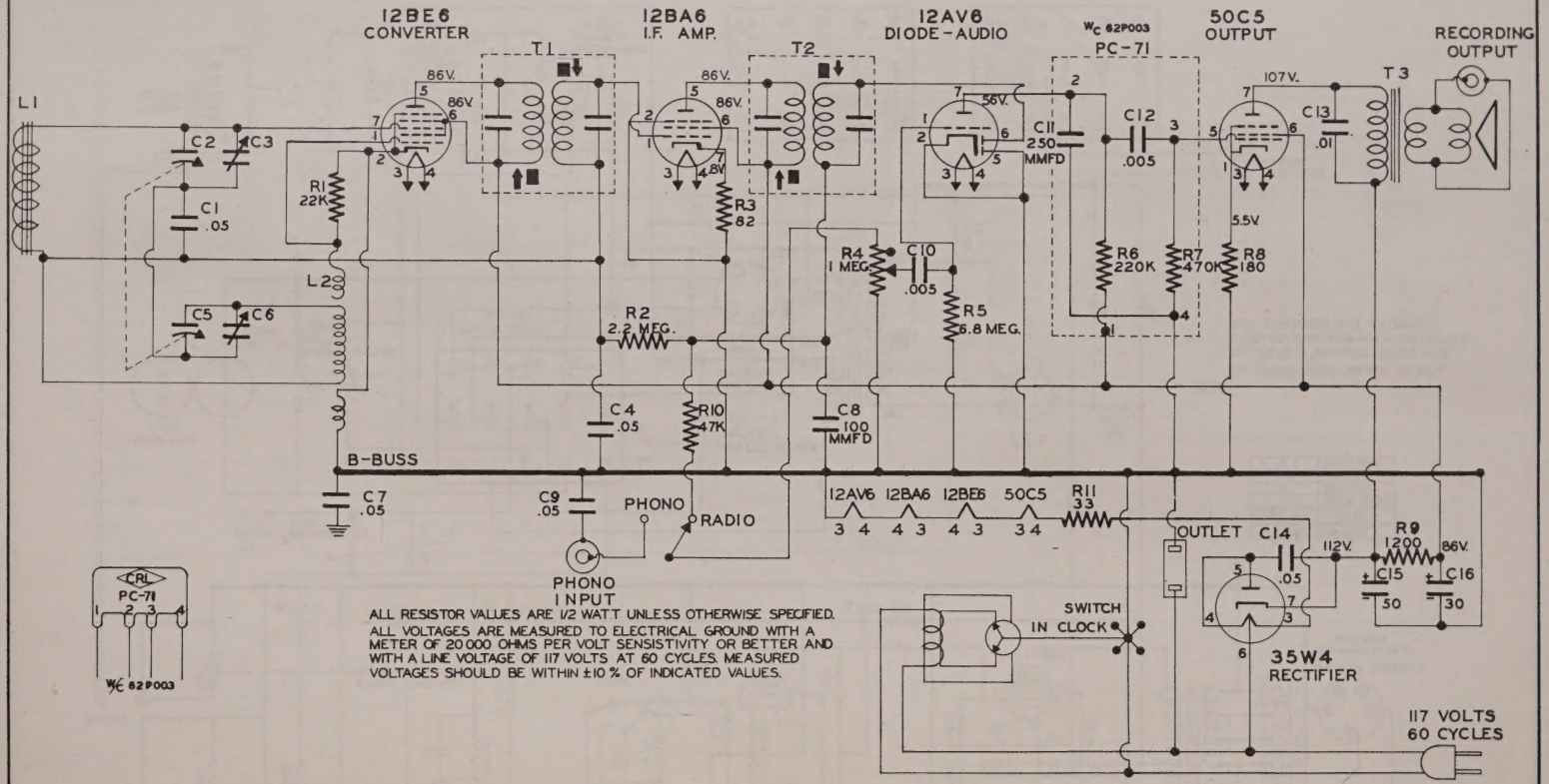
CHALLENGER MODEL CH618

Schematic Diagram Courtesy of Challenger Amplifier Co.



PENNEY'S MODEL 1966

Schematic Diagram Courtesy of Symphonic Radio & Electronic Corp.



ALL RESISTOR VALUES ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED.
ALL VOLTAGES ARE MEASURED TO ELECTRICAL GROUND WITH A METER OF 20,000 OHMS PER VOLT SENSISTIVITY OR BETTER AND WITH A LINE VOLTAGE OF 117 VOLTS AT 60 CYCLES. MEASURED VOLTAGES SHOULD BE WITHIN ±10 % OF INDICATED VALUES.

WEBCOR MODEL 300

Schematic Diagram Courtesy of Webcor, Inc.

PHOTOFACT® Folder with CIRCUITRACE®

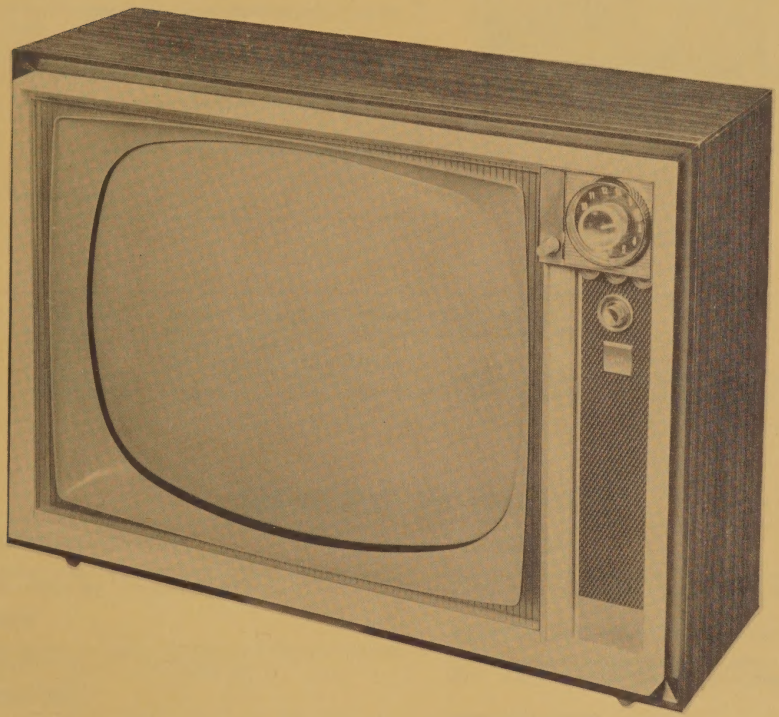
TRUETONE MODELS 2DC1040, 2DC1042, 2DC1044, 2DC2040

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

TRUETONE MODELS 2DC1040, 2DC1042, 2DC1044, 2DC2040



MODEL 2DC2040

TRUETONE MODELS 2DC1040, 2DC1042, 2DC1044, 2DC2040

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 487 FOLDER 1

PHOTOFACT® Folder with CIRCUITRACE®

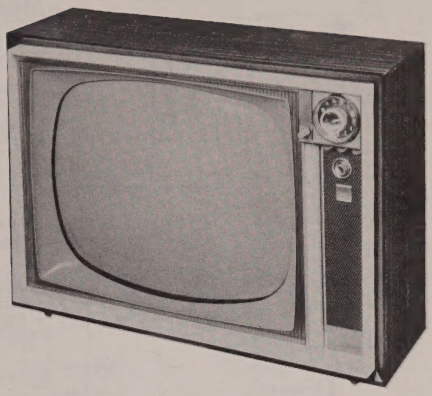
TRUETONE MODELS 2DC1040, 2DC1042, 2DC1044, 2DC2040

TRUETONE MODELS 2DC1040, 2DC1042, 2DC1044, 2DC2040

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 11 wood screws holding rear cover. Remove the rear cover.
2. Remove 7 push-on type knobs from front of cabinet. Remove escutcheon around channel selector shaft by pulling straight out. Remove 1 push-on type station indicator.
3. Remove speaker leads, antenna leads and unclip the pilot lamp.
4. Remove 4 wood screws, 2 on each side, holding picture tube mounting bracket at the top.
5. Remove 1 tuner mounting bracket screw at upper left rear of cabinet.
6. Remove 4 chassis bolts holding chassis to metal guides at bottom of cabinet.
7. Remove chassis.



MODEL 2DC2040

TRADE NAME	Truetone Models 2DC1040, 2DC1042, 2DC1044, 2DC2040
SUPPLIER	Western Auto Supply Co., 2107 Grande Avenue, Kansas City, 8, Mo.
TYPE SET	Television Receiver
TUBES	VHF - Seventeen, UHF - Eighteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 175 Watts, 1.85 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 2 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE

A fuse wire is used for filament protection. (For location, see M3 in photo "Chassis Bottom View".)

FUSE DEVICE

A 4.5Ω fusible resistor is used for low voltage power supply protection. (See R92 "Chassis Bottom View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, it is necessary to remove the chassis. (See "Disassembly Instructions".)

AGC

The AGC may be varied by means of a Range control. (For location, see "Tube Placement Chart".)

FOCUS

No provision is made to vary the focus on this receiver.

SYNC STABILITY

Sync stability may be varied by means of a Sync Stabilizer control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive trimmer. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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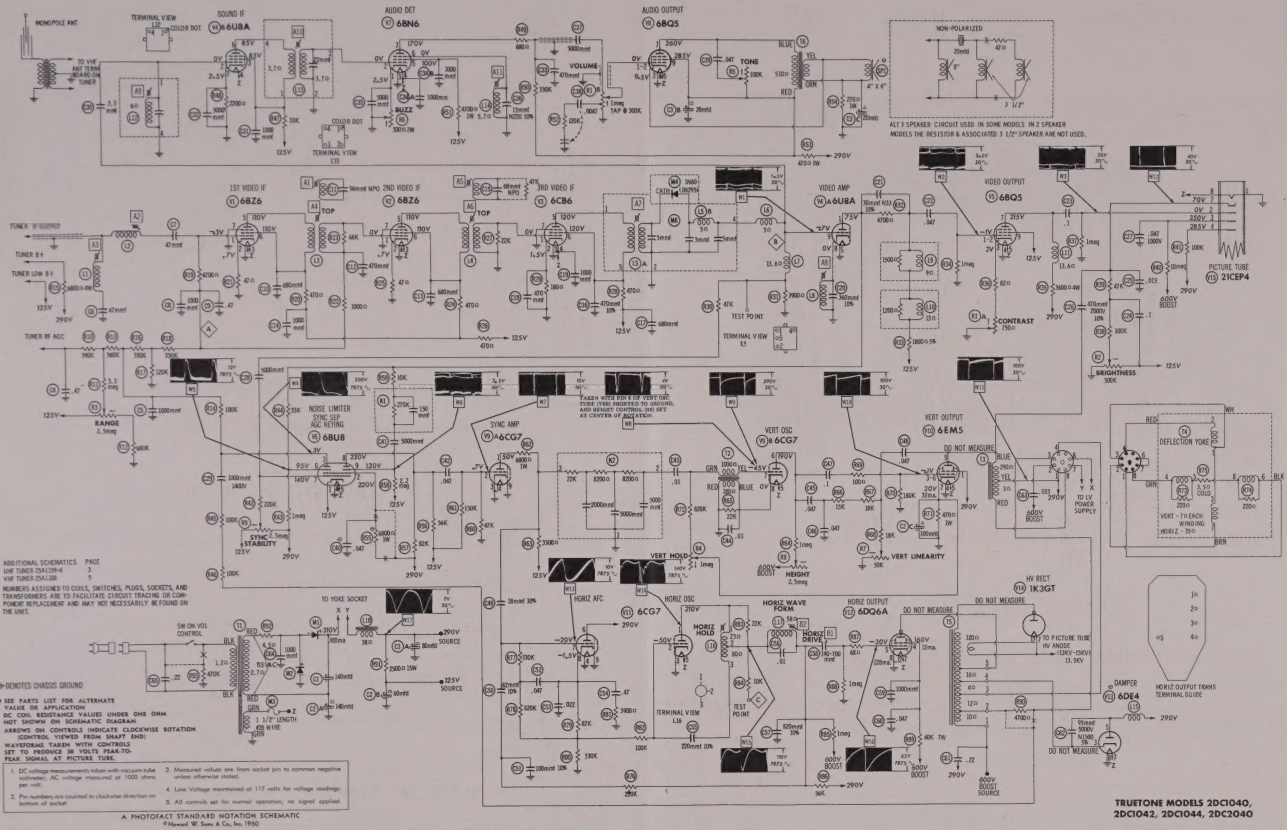
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JA737R

SET 487 FOLDER 1



ADDITIONAL SCHEMATICS PAGE
UHF TUNER 25A1139-4 3
VHF TUNER 25A1138 5

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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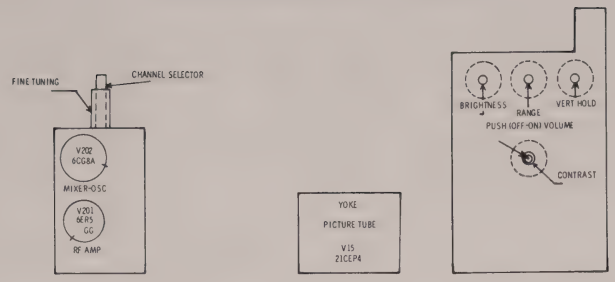
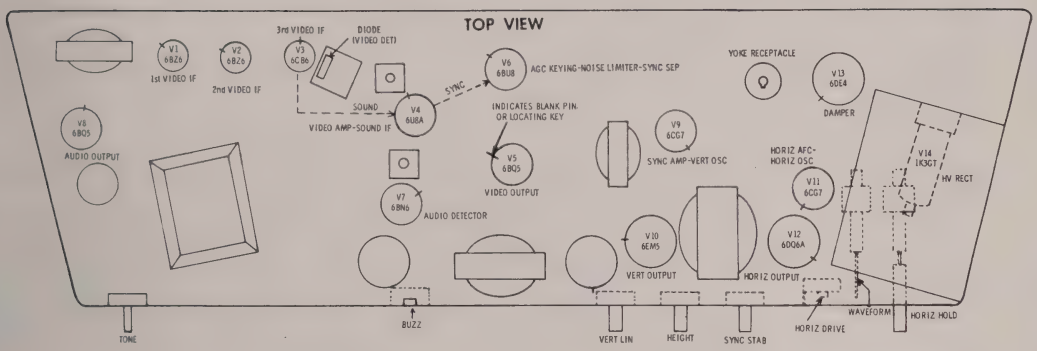
TRUETONE MODELS 2DC1040, 2DC1042, 2DC1044, 2DC2040

TUBE PLACEMENT CHART





TUBE FAILURE CHECK CHART

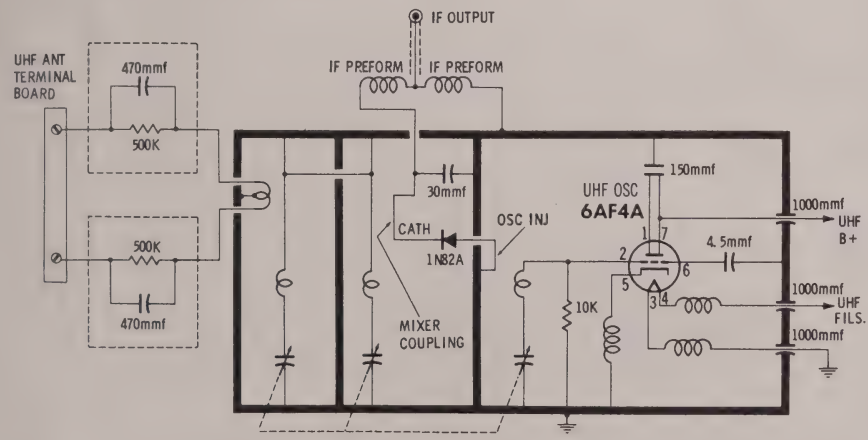
The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Rect. (B+)

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V15
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, Rect. (B+)
Vert. off freq. V9
Horiz. off freq. V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V5, V15
Has pic, no sound V4, V7, V8
Overloaded picture V6

SYNC FAILURE
No vert. sync V6, V9
No horiz. sync V6, V9
No vert. or horiz. sync V6, V9



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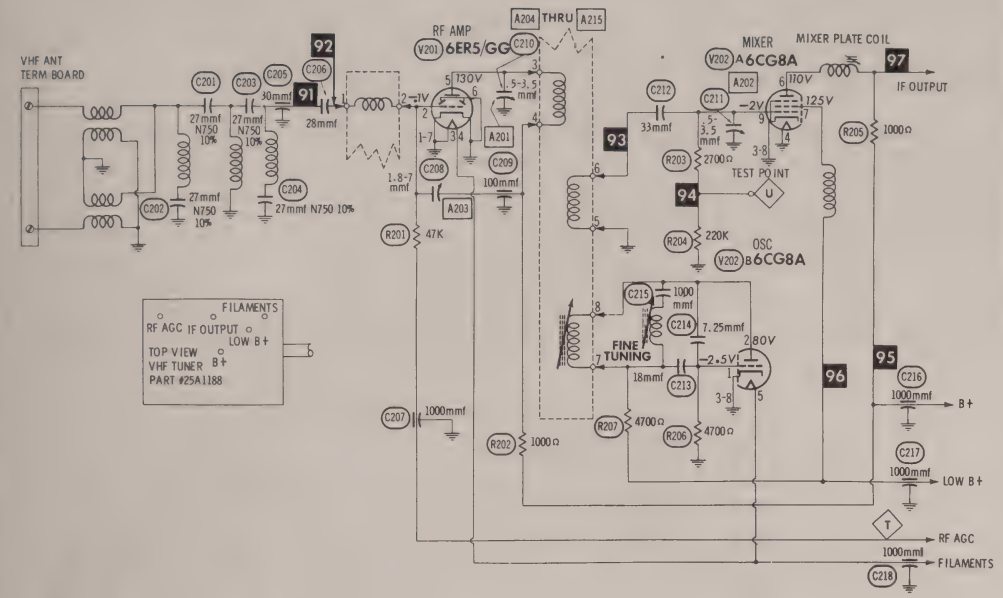
UHF TUNER 25A1159-4

SET 487 FOLDER 1

CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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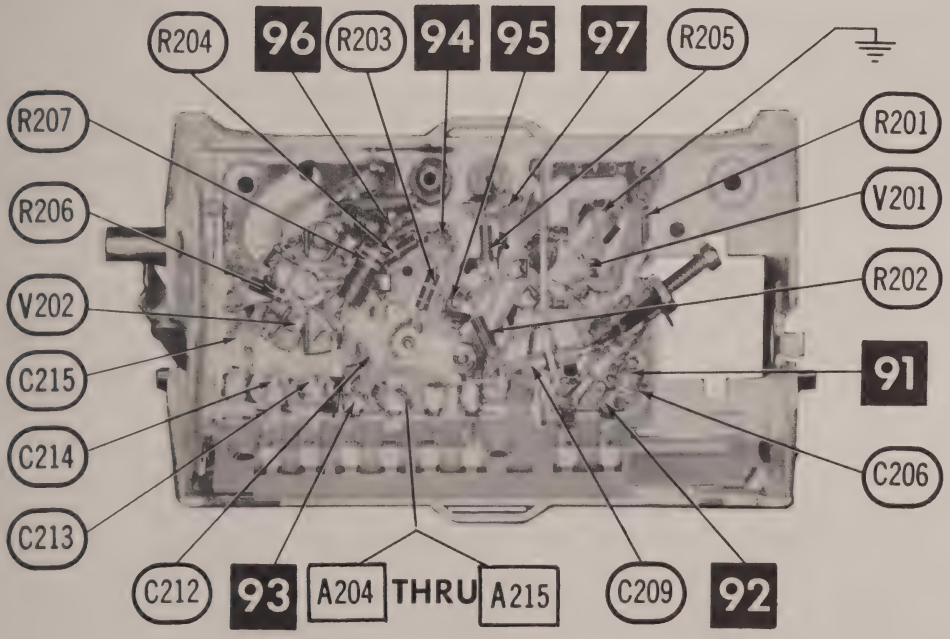
VHF TUNER 25A1188

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



VHF TUNER 25A1188 - BOTTOM VIEW

SET 487 FOLDER 1

TUNER ALIGNMENT INSTRUCTIONS
25A1188

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A203 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A204 thru A215 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

RF AND MIXER ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point (T) . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Turn Contrast fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. to point (T) Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check to see that other channels have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

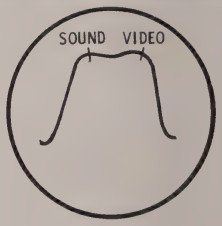


FIG. 201

OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K across Video Det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

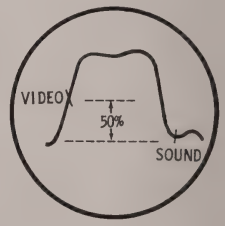


FIG. 202

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: General Cement #8282, 8606, 8606L or 9295
Walsco #2543, 2544 or 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	47.25MC	Any non-interfering channel	Vert. Amp. thru demodulator probe (Fig. 1) to pin 5 (plate) of 6BZ6 (V1). Low side to chassis.	A1	Adjust to place marker in trap notch as in Fig. 2.
2.	"	"	"	41.25MC 45.75MC 47.25MC	"	"	A2, A3, & Mixer Plate Coil	Adjust for response similar to Fig. 2. Mixer Plate Coil and A2 affect the shape of the top. A3 is adjusted to position the 41.25MC marker. This adjustment must be made correctly or the sound rejection will not be correct. The 45.75MC marker must be exactly on peak.
3.	"	"	"	42.8MC	"	Vert. Amp. thru 10K to point (B). Low side to chassis. DC probe of VTVM thru 10K to same point. Common to chassis. (Across Video Det. load)	A4	Increase bias at point (A) to 4.5 volts. Adjust sweep output for ~2 volts DC at point (B). Adjust A4 for maximum amplitude at marker.
4.	"	"	"	41.25MC	"	"	A5	Adjust for MINIMUM amplitude at marker.
5.	"	"	"	45.3MC	"	"	A6	Adjust for maximum gain at marker.
6.	"	"	"	44.0MC	"	"	A7	"
7.	"	"	"	41.25MC 42.4MC 42.8MC 44.0MC 44.5MC 45.3MC 45.75MC 47.25MC	"	"		Check for response similar to Fig. 3 with markers as shown. If necessary, retouch A2 thru A7 for desired response. A7 controls the symmetry of the top. A6 controls position of the 45.75MC marker. A4 controls position of the 42.4MC marker (this slug will seldom need retouching). CAUTION : The position of 44.5MC marker is very critical (98%).

4.5MC TRAP ALIGNMENT

Use 0-10 volts AC scale on VTVM.
Set Contrast fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.005mfd	High side to pin 9 (grid) of 6U8 (V4). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to pin 11 (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV signal and reduce signal level at the antenna terminals, by use of an attenuator or similar device, until a hiss similar to super-regeneration is heard in the sound.
Adjust A9, A10 and A11 for maximum undistorted sound.
Adjust the Buzz control for MINIMUM buzz.

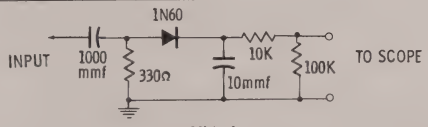


FIG. 1

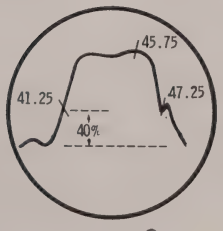


FIG. 2

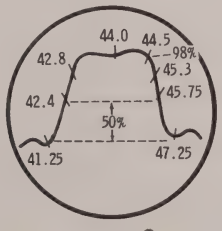


FIG. 3

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	CBS	GENERAL ELECTRIC	RAYTHEON	SYLVANIA	
	USE	TYPE	USE	TYPE	
V1	1st Video IF Amp.	6BZ6	V6	Audio Output	6BQ5
V2	2nd Video IF Amp.	6BZ6	V9	Sync Amp-Vert. Osc.	6CG7
V3	3rd Video IF Amp.	6CB6	V10	Vert. Output	6EM5
V4	Video Amp.-Sound IF	6U8A	V11	Horiz. AFC-Horiz. Osc.	6CG7
V5	Video Output	6BQ6	V12	Horiz. Output	6DQ6A
V6	4.5MC Keying-Sync Sep-Noise Limiter	6AU6	V13	Damper	6DE4 *
V7	Audio Detector	6AH6	V14	HV Rect.	1B3GT

* Alternate 6DA4, recommended replacement 6DE4.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	TRUETONE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V13	ECH4	ECH4 ①	ECH4 ①	ECH4/ ECH4A	ECH4/ ECH4A ②	① Aluminized ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	CAP.	VOLT.	TRUETONE PART No.	ARROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	140	150	4S342	AF188-23	3AG85	FP137	TM8-34	TVL-4138	
C3A	40	150	4S364	AF822-187-3	C7483	FP373	TM5-147	TVL-3819	
B	80	350			BHS015	TC68	TD-160-150	TVA-1422	
C	100	50							
C3A	80	350	4S346	AF84-94-80	20234	FP833.8	TM7-184	TVL-3833	
B	20	350			20BHS-80			TVA-1308.5	
C	30	50							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			ARROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	FUNENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	47 200V		F284N-47		CUB2P47	EDP-5-474	GEM-3047	ETM-P47	
C5	1000		B7D-001	DD-102	BYA1D1	CD-102	GP310	34K-D10	
C6	47		S1 47	DS-470	L30Q47	CD-470	GP347	10T3-Q47	
C7	47		S1 47	DS-470	L30Q47	CD-470	GP347	10T3-Q47	
C8	1000		B7D-001	DD-102	BYA1D1	CD-102	GP310	34K-D10	
C9	47 200V		F284N-47		CUB2P47	EDP-5-474	GEM-3047	ETM-P47	
C10	680		B7D-00068	DD-681	BYA10T68	CD-681	GP368	10T5-T68	
C11	56 NPO				CCQ56C	CCT0-560	CNO-456	CCTC-Q56	
C13	470		B7D-00047	DD-471	BYA10T47	CD-471	GP347	10T5-T47	
C13	680		B7D-00068	DD-681	BYA10T68	CD-681	GP368	10T5-T68	
C14	1000		B7D-001	DD-102	BYA1D1	CD-102	GP310	34K-D10	
C15	56 NPO		NPO-D1 56	DT2-56	CQG56C	CCT0-560	CNO-456	10TC4-Q56	
C16	470 10%		D1-470	DD-471	SR5T47	CD-471	GP347	10T5-T47	
C17	680		B7D-00068	DD-681	BYA10T68	CD-681	GP368	10T5-T68	
C18	470		B7D-00047	DD-471	BYA10T47	CD-471	GP347	10T5-T47	
C19	1000		B7D-001	DD-102	BYA1D01	CD-102	GP310	34K-D10	
C20	1000 10%		1469-00068	DD-102	BYA1D1	CD-102-B(M)K		ME-336	
C21	30 .933 10%	#47X880	F488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-P47	
C22	047 600V		F488N-1	DP-104	CUB4P1	4DP-3-104	GEM-401	47M-P1	
C23	.1 400V		F388N-1	DP-104	CUB2P1	EDP-5-104	GEM-361	ETM-P1	
C24	015 600V		P488N-015	DDM-153	CUB5S15	5DP-3-153	GEM-6115	57M-S15	
C25	470 3000V 10%	#47X771				YC4A-35-471K			
C27	047 1000V		P388N-047	DD-503	CUB3S47	3DP-5-473	GEM-3047	37M-S47	
C28	1000		B7D-001	DD-102	BYA1D01	CD-102	GP310	34K-D10	
C29	1000 1000V		B7D-102	DD-102	BYA1D01	CD-102	GP310	34K-D10	
C30	1 1		B7D-001	DD-102	BYA1D01	CD-102	GP310	34K-D10	
C31	1000		B7D-001	DD-102	BYA1D01	CD-102	GP310	34K-D10	
C32	5000		B7D-005	DD-502	BYA1D52	CD-502	GP350	34K-D50	
C33	5000		B7D-00047	DD-471	BYA10T47	CD-471	GP347	10T5-T47	
C34A	1000		B7D-XXD01	DD8-102	BYD8D01	CD-102	GP310	34K-D10	
B	1000		B7D-005	DD-502	BYA5D5	CD-502	GP350	34K-D50	
C35	15 X330 10%	#47X873				CD-153		10TCR-Q15	
C37	5000		B7D-005	DD-502	BYA1D52	CD-502	GP350	34K-D50	
C38	047 600V		P488N-0047	DS-473	CUB2S47	EDP-5-473	GEM-5347	57M-S47	
C39	047 600V		P488N-047	DD-503	CUB5S47	5DP-3-473	GEM-6147	67M-S47	
C40	047 600V	Note 1	P488N-047	DD-503	CUB5S47	5DP-3-473	GEM-6147	67M-S47	
C41	5000		B7D-005	DD-502	BYA1D52	CD-502	GP350	34K-D50	
C42	047 400V		P388N-047	DD-503	CUB3S47	3DP-5-473	GEM-3047	37M-S47	
C43	01 400V		P488N-01	DS-103	CUB4S1	4DP-3-103	GEM-41	47M-S1	
C44	01 600V		P488N-01	DS-103	CUB4S1	4DP-3-103	GEM-41	47M-S1	
C45	047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47	
C46	047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47	
C47	1 600V		P688N-1	DP-104	CUB6P1	6DP-4-104	GEM-601	67M-P1	
C48	047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	67M-S47	
C49	15 10%		1469-00015	DD-150	12R5G15	CM-30B-150K	CNO-415	MS-415	
C50	82 10%		1469-00082	DD-820	12R5G82	CM-30B-820K	CNO-482	MS-482	
C51	05 10%		1469-0001	DD-101	12R5T1	CM-30B-100K	MC2S05	MS-310	
C52	047 200V		P388N-047	DD-503	CUB3S47	3DP-5-473	GEM-4147	37M-S47	
C53	033 200V		P388N-033	DD-303	CUB3S33	3DP-5-333	GEM-3133	37M-S33	
C54	47 200V		P388N-47		CUB3P47	3DP-5-474	GEM-3047	37M-P47	
C55	05 10%		1469-00022	DD-221	12R5T22	CM-30B-221K	CNO-322	MS-322	
C56	01 400V		P488N-01	DS-103	CUB4S1	4DP-3-103	GEM-41	47M-S1	
C57	820 10%		1469-00082	DD-821	12R7S3	CM-30B-821K	MC2S51	MS-343	
C58	100-700	#17A276							
C59	1000		B7D-001	DD-102	BYA1D01	CD-102	GP310	34K-D10	
C60	047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47M-S47	
C61	22 600V		P688N-22		CUB6P22	6DP-5-223	GEM-6223	67M-P23	
C62	05 5000V 30,500 9%	#47X769							
C63	033 600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	67M-S33	
C64	1000		B7D-001	DD-102	BYA1D01	CD-102	GP310	34K-D10	
C65	22 400V		P488N-22		CUB4P1	4DP-5-224	GEM-4022	47M-P23	

Footnote Part Number. * Not normally in distributor's stock. Available thru distributor on order to manufacturer. Note 1 : Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA						INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.		
R1A	750Ω	½	T8X33		RTV-649		UR134-8		Contrast
B	Imeg	½			Not Req.				Volume
C	500K Tap	½							
	Switch				Not Req.				Push-Push Off-On Brightness
R2A	500K	½	4QX447	AB-59	A47-500E-S	BU1-133	U50		
B	Shaft			AK-8	RS-3/8	S19	DS-37		
R3A	2.5meg	½	4QX448	AB-33	A47-2.5meg	BU1-139	U35		Range
B	Shaft			AK-8	RS-3/8	S19	DS-37		
R4A	1meg	½	4QX446	AB-59	A47-1meg-S	BU1-137	U54		Vert. Hold
B	Shaft			AK-8	RS-3/8	S19	DS-37		
R5A	100K	½	4QX465	AB-40	A47-100E-S	BU1-138	PTA152L		Tone
B	Shaft			AK-18	Not Req.	Not Req.	Not Req.		
R6	500Ω	2(WW)	4QX473	WW-501	39-500	112-500	R500L		Buzz
R7A	500K	½	4QX467	AB-31	A47-500E-S	BU1-123	PTA54L		Vert. Linearity
B	Shaft			AK-19	Not Req.	TM4	Not Req.		
R8A	2.5meg	½	4QX466	AB-33	A47-2.5meg	BU1-139	SU-565		Height
B	Shaft			AK-19	Not Req.	TM4	Not Req.		
R9A	2.5meg	½	4QX466	AB-33	A47-2.5meg	BU1-139	SU-565		Sync. Stability
B	Shaft			AK-19	Not Req.	TM4	Not Req.		

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R10	390K		R38	100K		R66	15K	
R11	3.5meg		R39	47K		R67	18K	
R13	680K		R40	10meg		R68	18K	
R14	680K		R41	100K		R69	100Ω	
R16	100K		R43	120K		R70	100Ω	
R15	68000 4W	#43X344	R44	33K		R71	470Ω 1W	
R18	330K		R44	33K		R72	330K	
R17	100K		R45	100K		R73	220Ω	
R18	330K		R46	100K		R74	120Ω	
R19	470Ω		R47	33K		R75	3.5Ω (Coil)	
R20	470Ω		R48	33000		R76	330K	
R21	470		R49	6800		R77	330K	
R22	10000		R50	330K		R78	330K	
R23	56K		R51	330K 10W		R79	33K	
R24	470Ω		R52	330K		R80	330K	
R25	470		R53	4700 1W		R81	3900Ω	
R26	470		R54	270Ω 1W		R83	100K	
R27	33K		R55	68000 1W	Note 1	R83	33K	
R28	470Ω		R56	56K		R84	10K	
R29	180Ω		R57	82K		R85	10meg	
R30	47K		R58	3.9meg		R86	56K	
R31	39000		R59	10K		R87	68Ω	
R32	4700Ω		R6	47K		R88	1meg	
R33	18000 5%		R61	150K		R89	470K 1W	#43X343
R34	1meg		R62	68000 1W		R90	4700Ω	
R35	39000 4W	#43X331	R63	33000		R91	33000 1SW	#43X313
R36	1meg		R64	1meg		R92	4.5Ω	#43X398
R37	1meg		R65	22K		R93	470K	

Footnote Part Number. Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		TRUETONE PART No.	Gramer PART No.	Meisner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	39MC Trap	9A3289						
L2	1st Video IF	9A3266	17-4534	17-4534	TV-131	4302	VF-4	
L2A	2nd Video IF	9A3268	17-4535	17-4535		4303		
B	47.25MC Trap							
L2A	3rd Video IF	9A3414	17-4535	17-4535		6221		
B	41.25MC Trap							
L2A	4th Video IF	†	18-3036	18-3036	TV-180	6178		30ah
B	Series Peaking Coil							30ah
L6	Resonant Choke	9A3275	19-3180	19-3180	TV-184	6180	VP-3	190ah
L7	Shunt Peaking Coil	36A3	20-1004 ▲	20-1004 ▲	TV-181 ▲	1469 ▲	VP-3 ▲	
L8	4.5MC Trap	9A3074	18-3015 ▲	18-3015 ▲	TV-185 ▲	6172 ▲	VP-3 ▲	30ah ①
L9	Shunt Peaking Coil	38A48	18-3015 ▲	18-3015 ▲	TV-185 ▲	6172 ▲	VP-3 ▲	190ah ②
L20	Shunt Peaking Coil	36A49	19-4301 ■	19-4301 ■	TV-197 ■	6154 ■	VP-3 ■	190ah
L21	Shunt Peaking Coil	38A3	20-3180	20-3180	TV-184	6180	VP-3	
L13	1st Sound IF	9A3254	17-3036	17-3036				
L14	2nd Sound IF	9A3258	17-3496	17-3496	TV-113	6803	SF-3	
L24	Quadrature Coil	9A3287	20-1005	20-1005	TV-121	1480		
L15	RF Choke	9A3250	20-1001	20-1001	RC-562	1804		1.5ah

† Part of M5. ▲ Remove C30 (390mmf cap.)

■ Parallel with 1500Ω resistor. ■ Parallel with 1200Ω resistor.

① Wound on 1500Ω resistor. ② Wound on 1200Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L16	108Ω		S-S8A1008	S8-7	TV-165	6813	S8-7	Horiz. Osc. Tapped ② 80Ω
		183Ω						Horiz. Osc. Extension control shaft
L17	58Ω		9A3272	S8-5*		6345	S8-5*	Horiz. Waveform

* Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES	INDUCTANCE (0 CURRENT 1000 °C.)	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
L25	.300A	38Ω	1 Hy.	S3X204	S8C44				S8C44	C-38X

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2		TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
T1	117V ① 1.85A	315V ② .300A	6.3V ③ 9.4A		S3X389						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
T2	Vert. Osc.	S4X18	S8A03	A-3003	V40S	VB0G9	A-8135	S8A03	A-47X
T3	Vert. Output	S4X19			V31S				A-140X
T4	Yoke-Horiz. (15.8MH) (110°)-Vert. (44MH)	9A3459 ①	Y-58 ②		Y-110 ③		DY-37A ②	DY-58 ②	Y-80 & YW-33 ②
	Yoke Assembly	9A3454 ④							
	Rear Cover & Centering Device	3A496							YC-110
	Yoke Clamp	30X828							
T5	Horiz. Output	S3X352							D-185*

① Does not include ion trap cover and centering device. ② Cannot be same as original. ③ Use original yoke damping network. ④ Includes rear cover and centering device.

* CONNECTION DATA

ORIGINAL CONNECTIONS	8	4	3	2	1
TRIAD CONNECTIONS	11	3	5	4	6

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.	
T6	6300Ω	3-4Ω	S3X208	S4881 ①	A-3038	AU-601 ①	A-3060 ②	S4881 ①	S-33E①	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	4" x 6" PM 9" PM	3-4Ω		1AA531 ① 1AA572 ②	4SA15	① Table Models ② Console Models
				1AA574 ②		

TRANSFORMER (TRANSISTOR)

ITEM No.	USE	REPLACEMENT DATA	
		TRUETONE PART No.	REPLACEMENT DATA
X1	Sync Sep. Grid	150mf, 270K	
X2	Vert. Integrator	2000mH, 850Ω mH, 5000mH, 8300Ω, 8300Ω, 25K	76X7

COMPONENT COMBINATIONS

USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
			Arrovox	PA-501
			Centralab	PC100
			Mallory	MZ-100
			Sprague	VJ/V5

RECTIFIERS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CURRENT (Measured)		TRUETONE PART No.	INTERNATIONAL PART No.	IIT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.		
M1	.300A	65X25	S3X220	GE-500	EE504	40K	8R500		Silicon Type
		8D-500		HE504	40K	8R500			

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRUETONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	1½"	Length of #26 Wire						

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA					NOTES
		TRUETONE PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.		
M4	1N60 1N295*		1N60	1N60	1N60		Video Det. (Pigtail) * Alternate.

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M5	Tuner	25A1188	VHF
	Tuner	25A1159-4	UHF
M6	4th Video IF Assy.	9A2370	

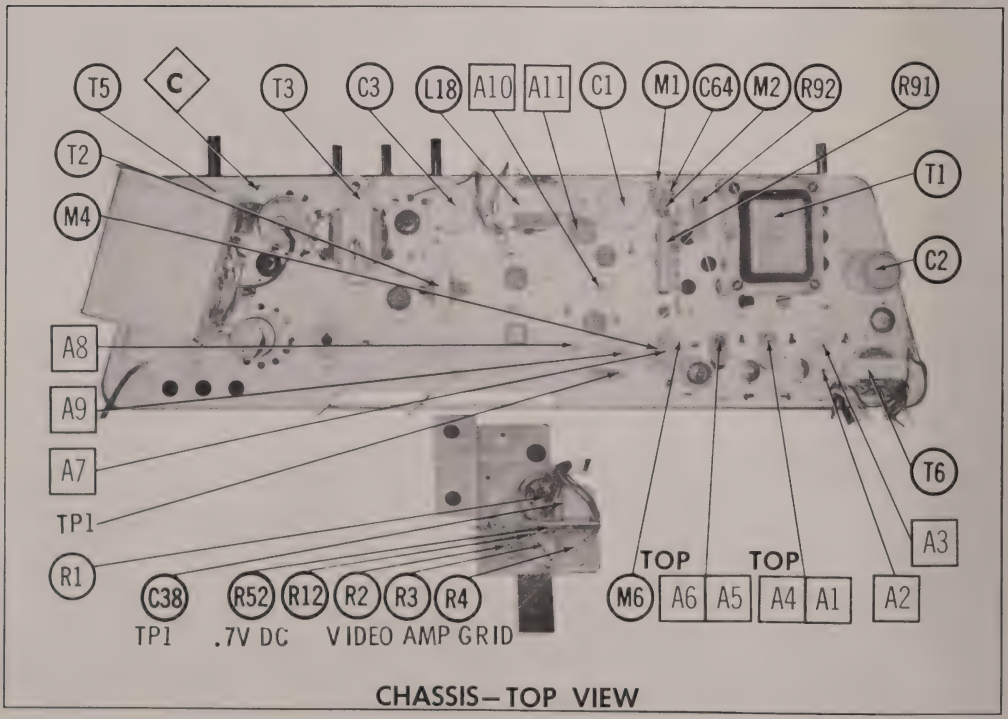
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	17X202-3	Tinted
Knob	10A985-1	Channel Selector
Knob	10A987-1	Fine Tuning
Knob	10A933-1	Contrast
Knob	10A932-1	On-Off Volume
Knob	10A894-2	UHF Indicator
Knob	10A893-2	UHF Tuning
Dial	26A656	Includes dial escutcheon assembly
Pointer	10A984-1	Channel Indicating

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



CHASSIS—TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

25A1188

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6ER5/GG	V202	Mixer-Osc. ◆	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30							
C206	28			TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7.0			829-7				
C209	100							
C210	.5-3.5							
C211	.5-3.5							
C212	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C213	18		NPO-DI 20	TCZ-20	C10Q18C	CCTO-180	CNO-418	10TCC-Q18
C214	7.25				C10V7C			10TS-V75
C215	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	

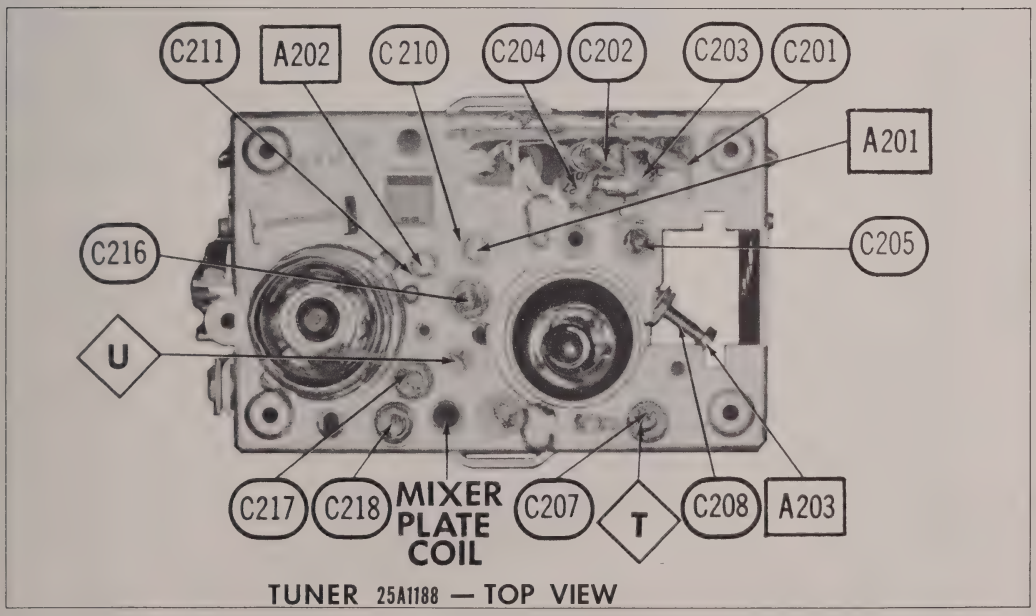
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω ◆	
R203	2700Ω	

ITEM No.	RATING	REMARKS
R204	220K	
R205	1000Ω	
R206	4700Ω	

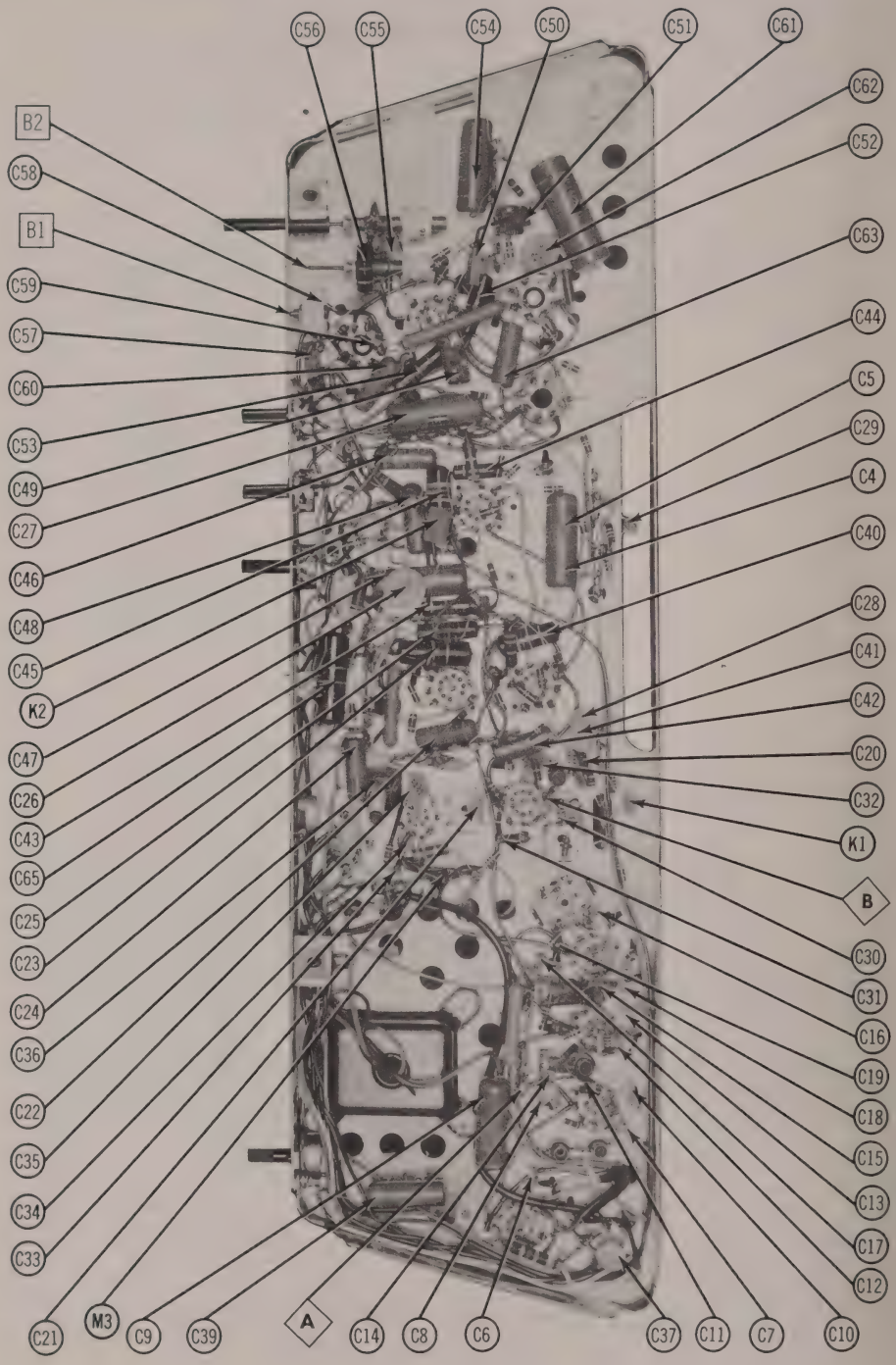
ITEM No.	RATING	REMARKS
R207	4700Ω	



TUNER 25A1188 — TOP VIEW

TRUETONE MODELS 2DC1040, 2DC1042, 2DC1044, 2DC2040

FOLDER 1



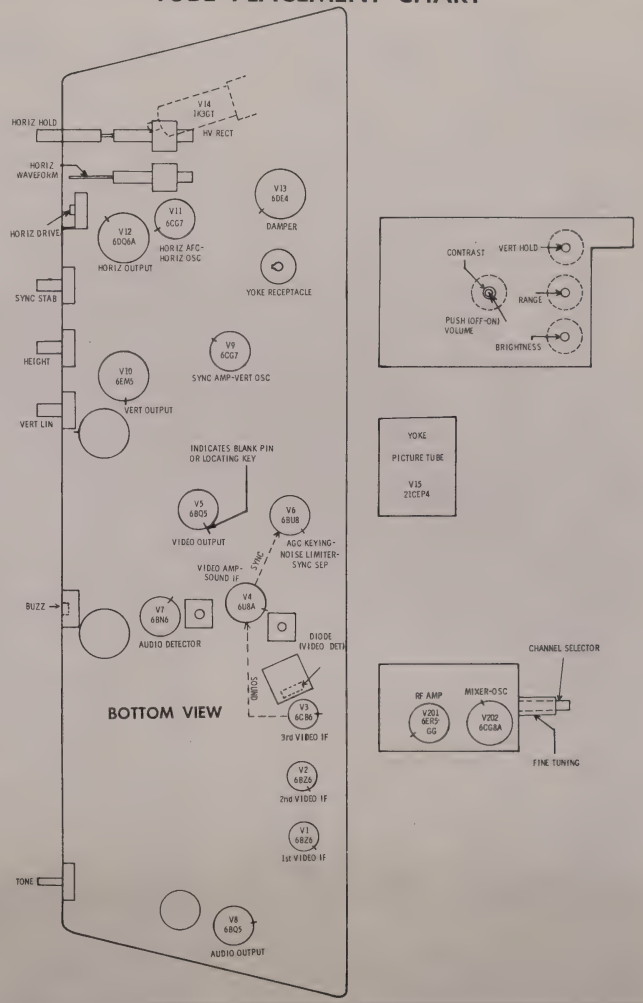
CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

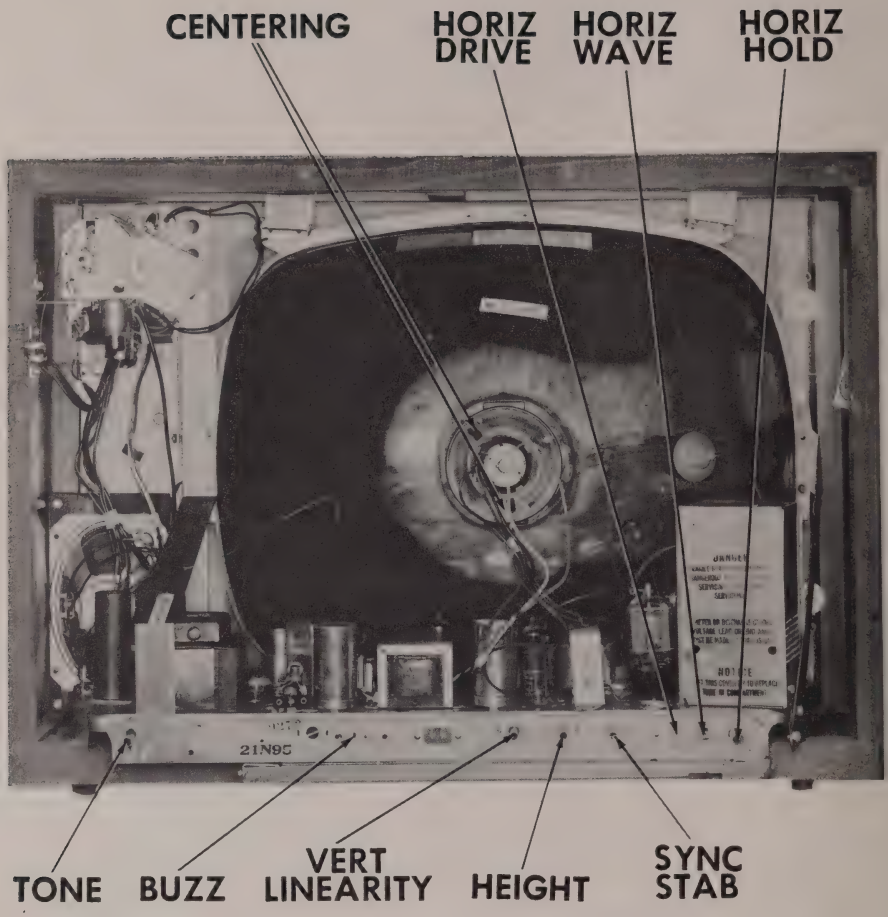
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	450K	47Ω	.1Ω	0Ω	†3500Ω	†3500Ω	0Ω		
V2	6BZ6	450K	47Ω	.1Ω	0Ω	†3500Ω	†3500Ω	0Ω		
V3	6CB6	.2Ω	180Ω	0Ω	.1Ω	†3000Ω	†3000Ω	0Ω		
V4	6U8A	†6000Ω	6Ω	†35K	.1Ω	0Ω	†35K	2200Ω	.3Ω	3900Ω
V5	6BQ5	1meg	1meg	• 200Ω	0Ω	.1Ω	NC	†3600Ω	NC	†2500Ω
V6	6BU8	†2500Ω	†6800Ω	550K	0Ω	.5Ω	†42K	•†900K	†35K	†2.2meg
V7	6BN6	• 320Ω	3.7Ω	0Ω	.1Ω	†7200Ω	5.7Ω	†330K		
V8	6BQ5	0Ω	0Ω	270Ω	0Ω	.1Ω	NC	†980Ω	NC	†470Ω
V9	6CG7	†13K	40K	0Ω	0Ω	.1Ω	•†1.8meg	•1.4meg	180Ω	0Ω
V10	6EM5	†0Ω	TP	180K	0Ω	.1Ω	180K	470Ω	TP	†290Ω
V11	6CG7	†56K	430K	0Ω	0Ω	.1Ω	†0Ω	1.5meg	410K	0Ω
V12	6DQ6A	TP	0Ω	TP	†40K	1meg	TP	.1Ω	0Ω	TOP CAP †16Ω
V13	6DE4	TP	TP	¶1.2meg	NC	†.2Ω	TP	.1Ω	0Ω	
V14	1K3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP 336Ω
V15	21CEP4	0Ω	1meg	†10meg	†100K	NC	NC	• 200K	.1Ω	
V201	6ER5/GG	0Ω	1.3meg	0Ω	.1Ω	†7800Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	†7200Ω	0Ω	0Ω	.1Ω	†7800Ω	†2500Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 290V SOURCE.
† MEASURED FROM PIN 3 OF V13.
NC NO CONNECTION.
TP TIE POINT.

TUBE PLACEMENT CHART





CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a station and adjust the Horizontal Hold until the picture is just about to tear out of sync as can be seen at the top of the picture.

Turn the Contrast control fully counterclockwise and Brightness control clockwise so that the picture appears washed out. Turn the Horizontal Drive trimmer (B1) clockwise until white vertical bars (drive lines) appear in the left center portion of the raster, then counterclockwise until the white bars just disappear.

Connect the Vertical Amplifier of the scope to point Ⓒ. Low side to chassis. Adjust the Horizontal Waveform slug (B2) until the round and sharp peaks of the waveform are equal in amplitude. (See Fig. 4). Keep the picture in sync during this adjustment.

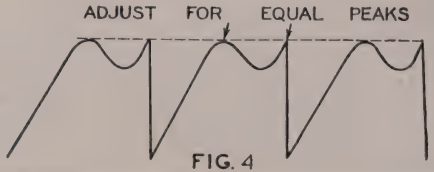


FIG. 4

PHOTOFACT® Folder with CIRCUITRACE

WESTINGHOUSE CHASSIS V-2378-1, -2, -3, -4, -5, -6, V-2379-1, -2, -3, V-2386-1, V-2387-1

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

WESTINGHOUSE CHASSIS V-2378-1, -2, -3, -4, -5, -6, V-2379-1, -2, -3, V-2386-1, V-2387-1

MODEL H-K4600 (CH. V-2378-6, V-2386-1, & V-2387-1)

WESTINGHOUSE CHASSIS V-2378-1, -2, -3, -4, -5, -6, V-2379-1, -2, -3, V-2386-1, V-2387-1

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WESTINGHOUSE CHASSIS V-2378-1, -2, -3, -4, -5, -6, V-2379-1, -2, -3, V-2386-1, V-2387-1

MODEL H-K4600 (CH. V-2378-6, V-2386-1, & V-2387-1)

TRADE NAME	Westinghouse	MODELS	CHASSIS
		H-K4000, H-K4001, H-K4002, H-T3700, H-T3701, H-T3702	V-2378-1
		H-K4000U, H-K4001U, H-K4002U, H-T3700U, H-T3701U, H-T3702U	V-2378-2
		H-K4100, H-K4101, H-K4102, H-K4103, H-K4200, H-K4201, H-K4202	V-2378-3
		H-K4100U, H-K4101U, H-K4102U, H-K4103U, H-K4200U, H-K4201U, H-K4202U	V-2378-4
		H-K4400, H-K4401, H-K4402, H-K4403, H-K4500, H-K4501, H-K4502, H-K4503	V-2378-5
		H-K4600, H-K4601, H-K4602	V-2378-6
		H-K4300	V-2379-1
		H-K4300U	V-2379-2
		H-K4800	V-2379-3
MANUFACTURER	Westinghouse Electric Corp., Television & Radio Div., Metuchen, N. J.		
TYPE SET	Television Receiver (Models With Ch. V-2378-5, -6, V-2379-3 Use Remote Control Receiver Ch. V-2386-1 or V-2386-2 and Transmitter Ch. V-2387-1).		
TUBES	TV: Eighteen Remote Control Receiver: Seven Remote Control Transmitter: One Transistor		
POWER SUPPLY RATING	105-120 Volts AC, 60 Cycle TV & Remote Control Receiver 270 Watts, 2.4 Amp. @ 117 Volts AC (When Tuning) TV & Remote Control Receiver 230 Watts, 2.1 Amp. @ 117 Volts AC (Not Tuning) TV 197 Watts, 1.7 Amp. @ 117 Volts AC Remote Control Receiver 33 Watts, .38A @ 117 Volts AC		
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 3 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.
Note: 23" Models have safety glass laminated to face of picture tube and cannot be removed.

FUSE

TV: A line fuse is used for LV Power Supply protection. (See "Tube Placement Chart".) Two fuse wires are used for filament protection. (See M3 and M4 in Photo "Chassis Bottom View".)
Remote Control Receiver: Some versions use a line fuse for LV Power Supply protection. (See M3 in Photo "Chassis Bottom View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch up the VHF Oscillator, it is necessary to remove the chassis. (See "Disassembly Instructions".)

AGC

No provision is made to vary the AGC on this receiver.

FOCUS

No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency slug. (For location, see "Tube Placement Chart".)

WIDTH

Loosen the yoke clamp before making adjustment. Locate plastic tab (which contains copper rectangle bonded to one side) between the top side of the picture tube neck and yoke. Move plastic tab in or out to adjust width.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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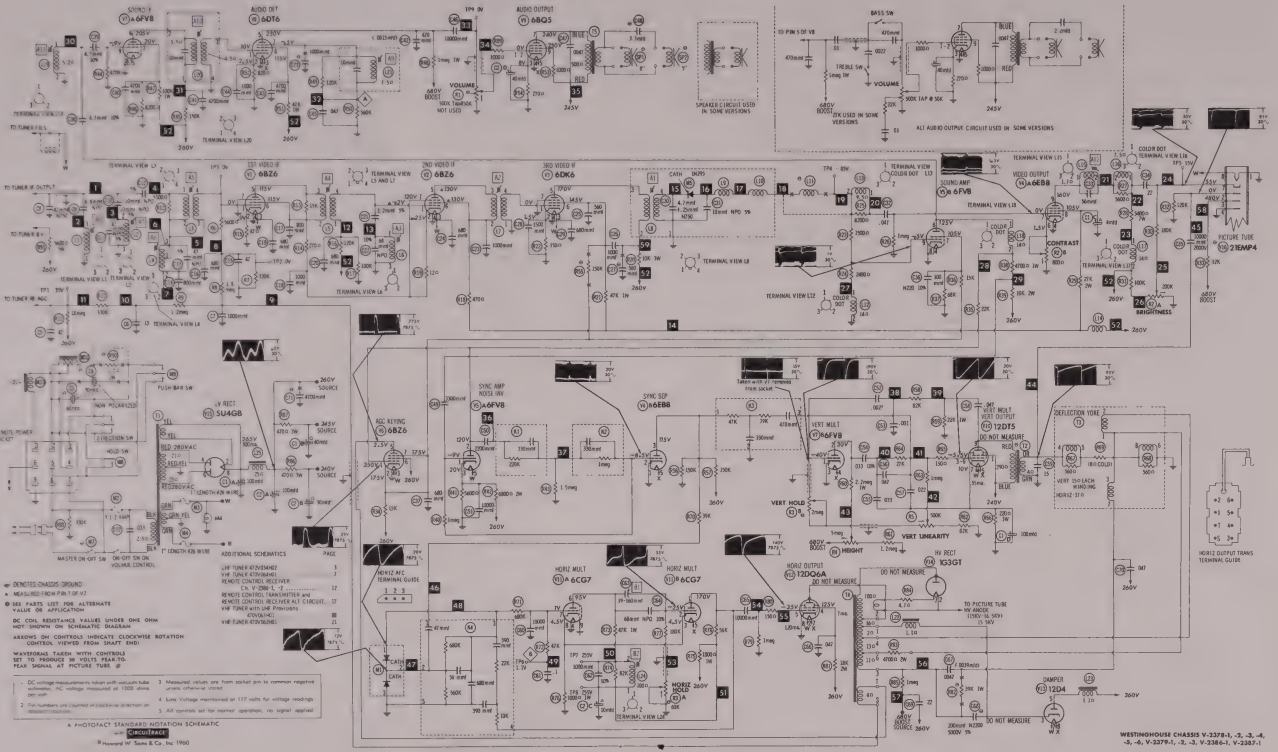
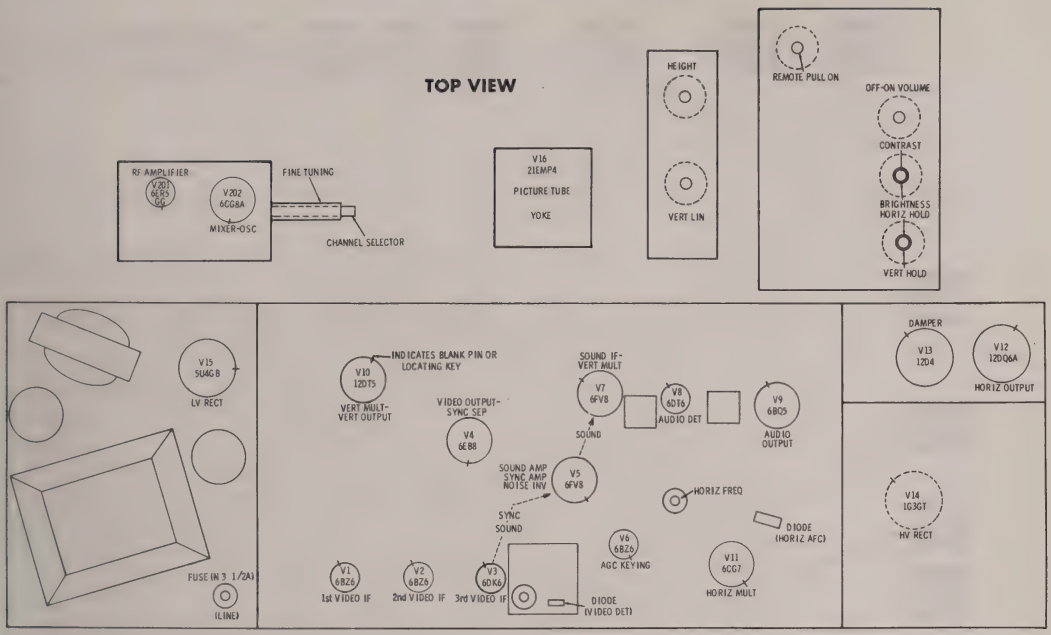

WESTINGHOUSE CHASSIS V-2378-1, -2, -3, -4, -5, -6, V-2379-1, -2, -3, V-2386-1, V-2387-1
WESTINGHOUSE CHASSIS V-2378-1, -2, -3, -4, -5, -6, V-2379-1, -2, -3, V-2386-1, V-2387-1
FOLDER 2
PAGE 2
PAGE 27

TUBE PLACEMENT CHART



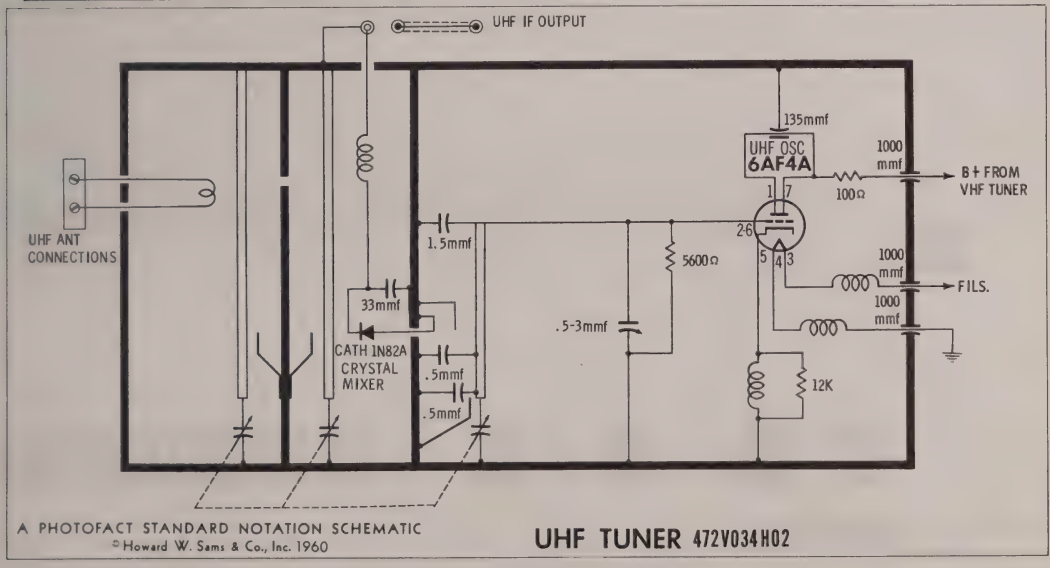
TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), Fuse (Filament), V15

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V16
No vertical deflection V7, V10
Poor vert. linearity or foldover V7, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V7
Horiz. off freq. Diode (Horiz. AFC), V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.)
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V7, V8, V9
Overloaded picture V6
No Sync No Sound V5
SYNC FAILURE
No vert. sync V4, V5
No horiz. sync V4, V5, Diode (Horiz. AFC)
No vert. or horiz. sync V4, V5



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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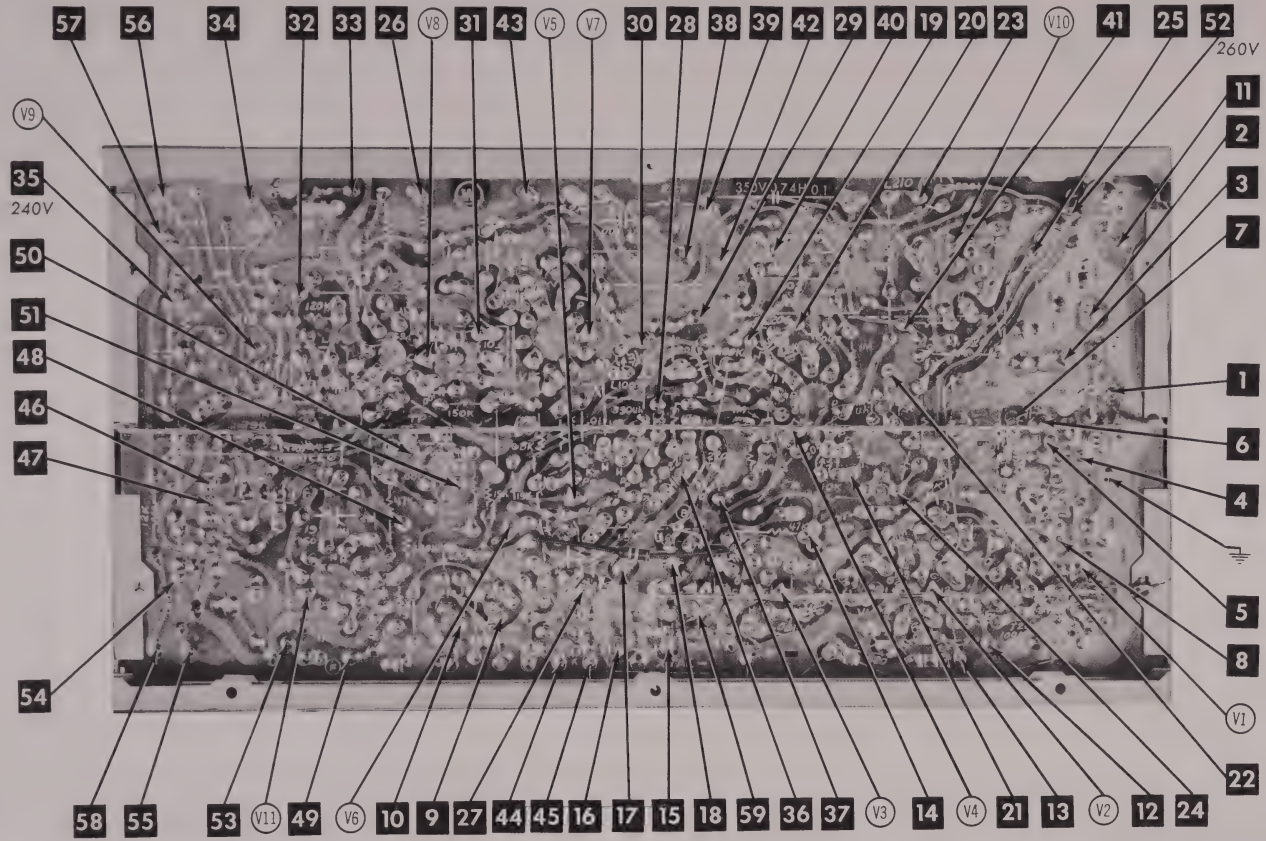
UHF TUNER 472V034H02

WESTINGHOUSE CHASSIS V-2378-1, -2, -3, -4, -5, -6, V-2379-1, -2, -3, V-2386-1, V-2387-1

FOLDER 2



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PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead to a 4 volt bias supply to point TP-2. Positive to chassis.
Connect the negative lead to a 2.5 volt bias supply to point TP-4. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .001mfd to TP-3. Low side to chassis.	Not used	44.25MC (Unmod.)	10	USE VTVM DC probe to TP-4. Common to chassis. (Across Video Det. Load)	A1	Adjust for maximum deflection.
2.	"	"	45.62MC	"	"	A2	"
3.	"	"	39.75MC	"	"	A3	Adjust for MINIMUM deflection.
4.	"	"	42.75MC	"	"	A4	Adjust for maximum deflection.
5.	"	44MC (10MC Swp.)	39.75MC 41.25MC 42.25MC 43.0MC 45.0MC 45.75MC	"	Vert. Amp. to TP-4. Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch A1, A2 and A4 for desired response.
6.	High side to ungrounded tube shield floating over Mixer-Osc. Low side to chassis.	Not used	44.25MC	"	USE VTVM DC probe to TP-4. Common to chassis.	Mixer Plate Coil	Adjust for maximum deflection.
7.	"	"	44.0MC	"	"	A5	"
8.	"	"	41.25MC	"	"	A6	Adjust for MINIMUM deflection.
9.	"	"	47.25MC	"	"	A7	"
10.	"	"	"	"	"	A8	"
11.	"	44MC (10MC Swp.)	41.25MC 42.25MC 43.0MC 45.0MC 45.75MC	"	Vert. Amp. to TP-4. Low side to chassis.		Check for response similar to Fig. 2. If necessary, retouch Mixer Plate Coil and A5 for desired response.

SOUND IF ALIGNMENT

Tune in a TV signal, preferably with a test pattern and tone signal. Adjust the Fine Tuning for best reception. Set the Volume Control so that the sound is audible. Adjust A9 for maximum sound output.
Connect a short clip lead from pin 1 (grid) of the 3rd Video IF Amp. to chassis. Connect the DC probe of the VTVM to point (A). Common to chassis. Adjust A10 for maximum negative voltage on the VTVM. Remove the clip lead from the circuit. Disconnect the antenna lead and place near the antenna terminals so that the signal coupled to the receiver produces a very weak picture. A hiss will be noted in the sound. Adjust A11 for maximum negative voltage on the VTVM. If the VTVM indicates a broad response while adjusting A11, move the antenna lead farther from the antenna terminals.

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	High side thru .001mfd to TP-4. Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	Demodulator probe thru .001mfd to TP-5. Common to chassis.	A12	Adjust for MINIMUM deflection.

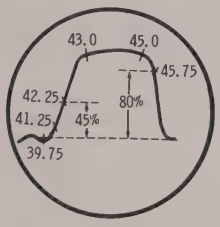


FIG.1

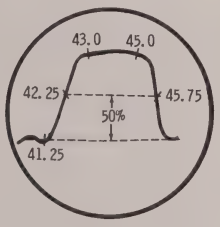


FIG.2

TUNER ALIGNMENT INSTRUCTIONS

470V064H01

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: A201, A202 and A203.....GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A204 thru A215.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

RF AND MIXER ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis	A201 A202 A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

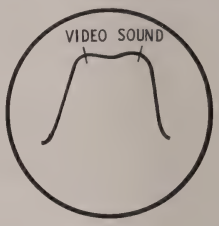


FIG. 201

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

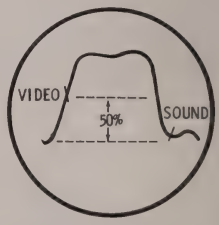
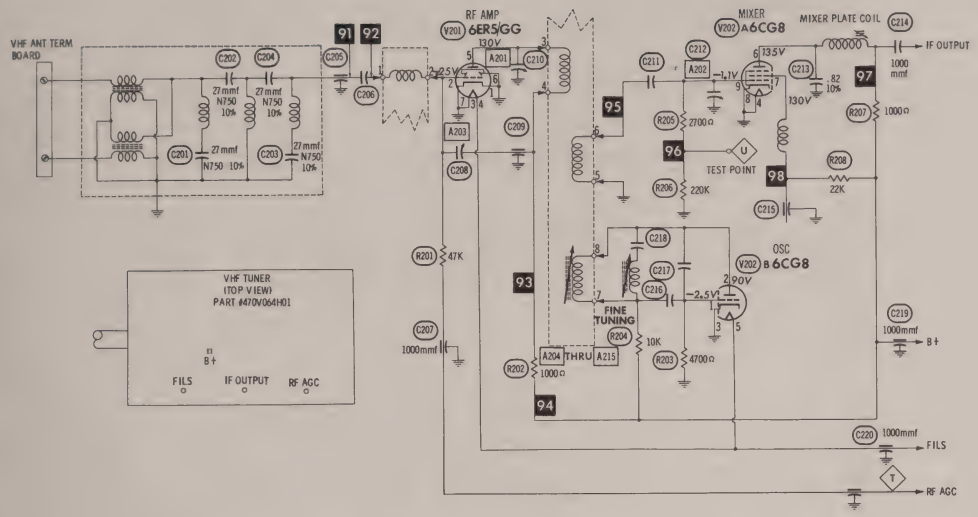


FIG. 202



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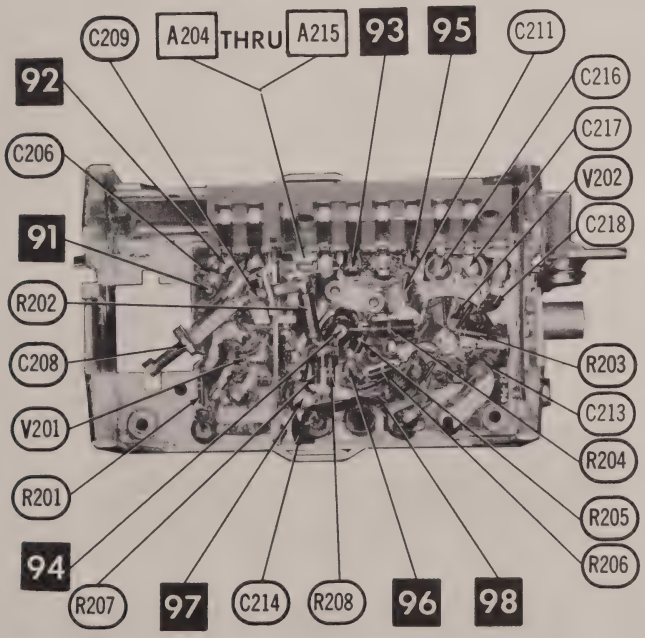
VHF TUNER 470V064H01



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VHF TUNER 470V064H01 BOTTOM VIEW

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TUNER PARTS LIST AND DESCRIPTIONS

470V064H01

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6ER5/GG	V202	Mixer-Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205								
C206								
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208								
C209								
C210								
C211								
C212								
C213	.82 10%							
C214	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	
C215								
C216								
C217								
C218								
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	
C220	1000		EF-001	MFT-1000		CCF-102	CT280A	

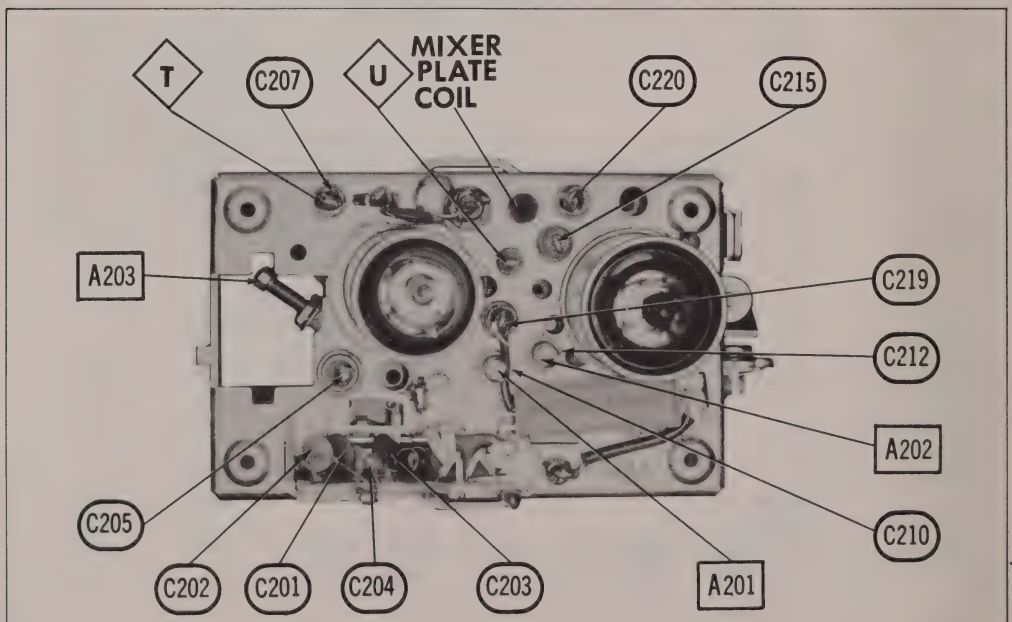
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	4700Ω	

ITEM No.	RATING	REMARKS
R204	10K	
R205	2700Ω	
R206	220K	

ITEM No.	RATING	REMARKS
R207	1000Ω	
R208	22K	



VHF TUNER 470V064H01—TOP VIEW

REMOTE CONTROL RECEIVER
PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	1st 40KC Amp.	6AU6
V2	2nd 40KC Amp.	6AU6
V3	3rd 40KC Amp.	6AU6
V4	Discriminator	6AL5
V5	Motor Forward Relay Control - AGC	12BH7A
V6	Motor Reverse Relay Control - Modulation Amp.	12BH7A
V7	Function Relay Control - Modulation Amp.	12BH7A

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■100	200	218V025H38	AFH2-24-21		FP129.1		TVLS-2464.1*	
B	▲100	200				TC1265			
C2	4	50	218V025H08	PRSI400	BBR4-50	TT50X4	ML4-50	TE-1302.1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C4	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C5	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68
C6	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C7	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C8	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C9	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68
C10	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C11	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C12	1500 5%		1464-0015		1R5D15	CM-19B-152J	MCE456	MS-215
C13	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C14	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C15	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C16	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C17	560 5%		1469-00056	DD-560	1R5T56	CM-19B-561J	MCJ247	MS-356
C18	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP210	5HK-D10
C19	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP210	5HK-D10
C20	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C21	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C22	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C23	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C24	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C25	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C26	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C27	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP210	5HK-D10
C28	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP210	5HK-D10
C29	6800		BPD-0068	DD-682	BYA10D68	CCD-682	GP268	5HK-D68
C30	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C31	.22 400V	Note 1	P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C32	.22 400V	Note 1	P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C33	.1 600V	Note 1	P688N-1		CUB6P1	6DP-4-104	GEM-601	6TM-P1

Note 1. May not be used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	1meg	
R2	150K	
R3	12K	
R4	12K	
R5	56K	
R6	1800Ω	
R7	100Ω	
R8	68K	
R9	1800Ω	
R10	100Ω	
R11	68K	
R12	3300Ω	
R13	12K	
R14	39K	
R15	150Ω	
R16	390K	
R17	2.2meg	
R18	2.2meg	
R19	2.2meg	
R20	2.2meg	
R21	2.2meg	
R22	1meg	
R23	2.2meg	
R24	1meg	
R25	68K	
R26	1meg	
R27	470K	
R28	2.2meg	
R29	1meg	
R30	12K	
R31	100K	Note 1
R32	33K	
R33	470Ω 2W	
R34	4.7meg	
R35	470K	
R36	150Ω	Note 1

Note 1. May not be used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Westinghouse PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Shunt Peaking Coil	230V087H01	19-1053	19-1053		6308		20MH
L2	1st 40KC Amp.	230V081H01						
L3	2nd 40KC Amp.	230V081H01						
L4	40KC Discriminator	235V055H01						

REMOTE CONTROL RECEIVER
PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .38A (.66A Motor Running)	130V @ .030A Tap @ 25V @ .0001A	6.3V @ 3.1A SEC. 3 24V @ 1.3A (Motor Running)	410V013H01						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Westinghouse PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1 M2	.030A .0001A	295V006H03 * 295V018H01 ♦	5E4 *	HA504 *	40K *	SR500 *	* Silicon ♦ Selenium Diode

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Westinghouse PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	MDV	1A 250V P/T S/B	Note 1		315001 (1A 250V P/T S/B)		MDV 1	

Note 1. May not be used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M4	Relay	753V012H01	Function Selector
M5	Relay	753V013H01	Motor Forward
M6	Relay	753V013H01	Motor Reverse
	Transducer	753V014H01	

REMOTE CONTROL TRANSMITTER
PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	10027 *	Oscillator					PNP * 2N402 Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.		
C34	15	7	218V012H21	PWE10015	ECC15-10	TT10X15	ML15-25	TE-1116		

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C35	50000	30V			DA-503	H-05S5	1DP-2-503	TA-150	TG-S50
C36	1200	10%		1464-0012		1R5D12	CM-19B-122K	MCJ455	MS-212
C37	100	10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C38	5-80		#217V506H01				462		
C39	470			BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C40	1000	10%		DI-1000	DD-102	1R5D1	CM-19B-102K	MCB255	MS-21
C41	220			DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22

Westinghouse Part Number.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R37	4700Ω	
R38	4700Ω	Note 1

ITEM No.	RATING	REMARKS
R39	1800Ω	
R40	390Ω	

ITEM No.	RATING	REMARKS
R41	150Ω	
R42	10meg	

Note 1. May not be used in some versions.

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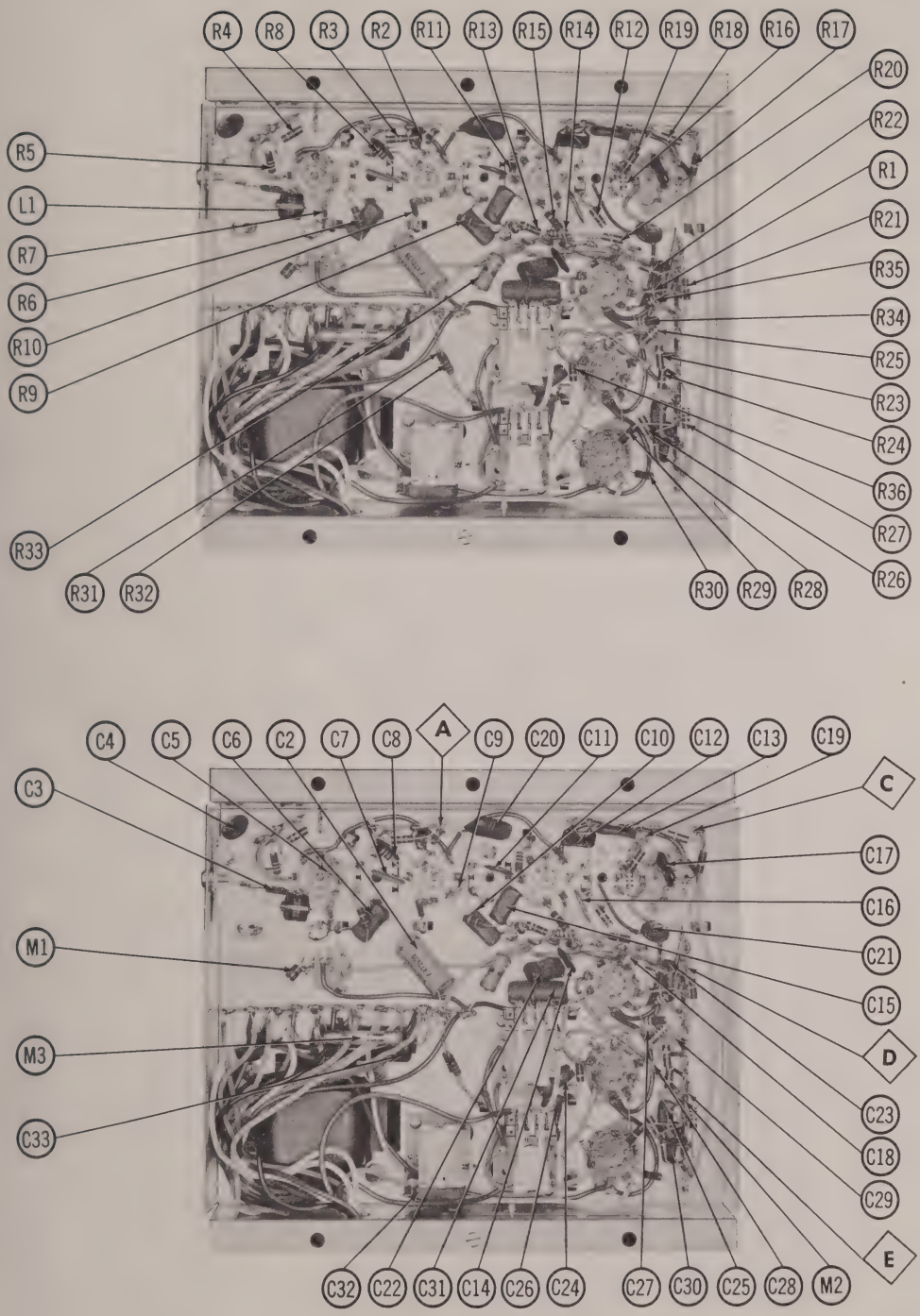
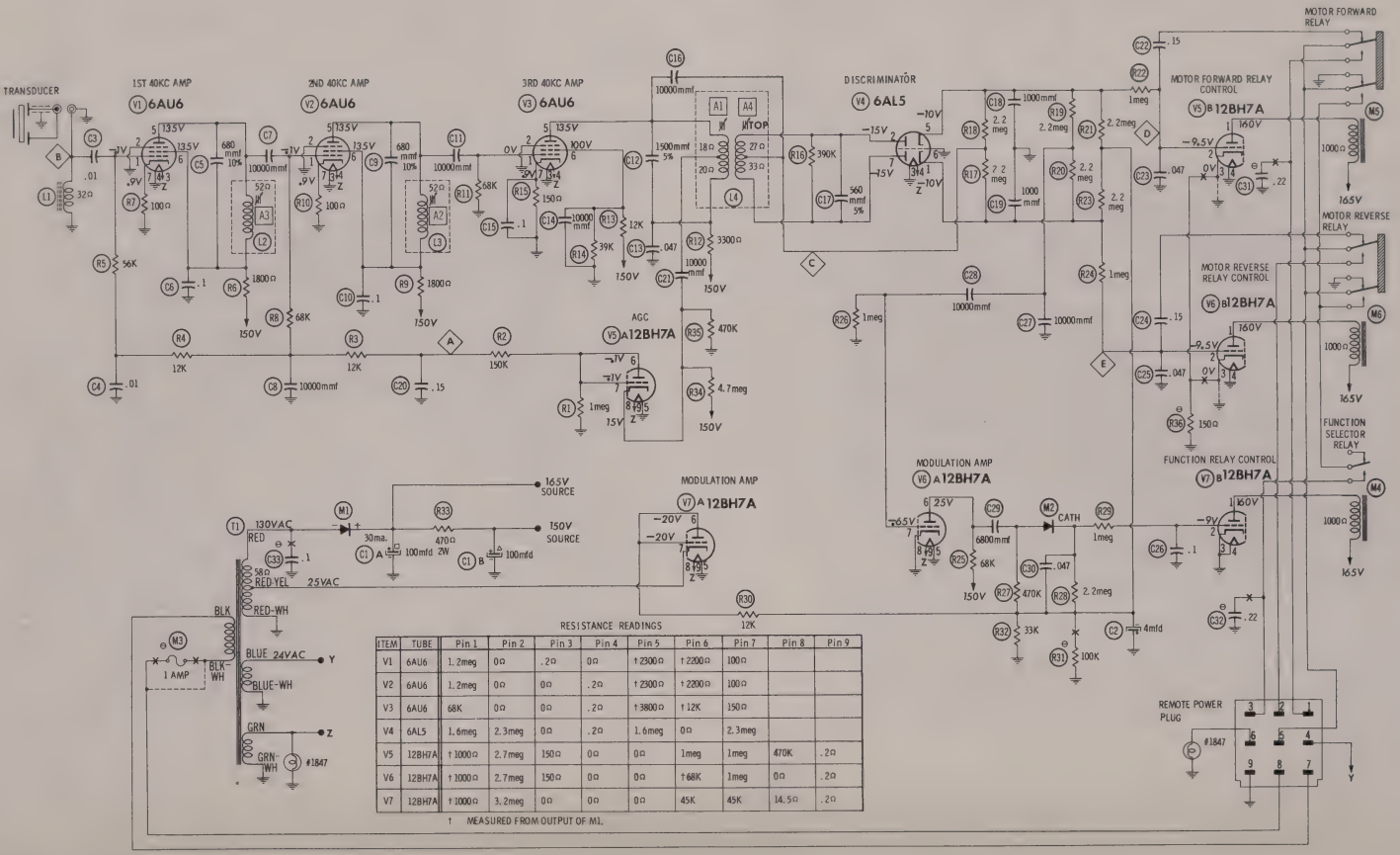


REMOTE CONTROL RECEIVER CH. V-2386-1 - BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6	1.2meg	0Ω	.2Ω	0Ω	†2300Ω	†2200Ω	100Ω		
V2	6AU6	1.2meg	0Ω	0Ω	.2Ω	†2300Ω	†2200Ω	100Ω		
V3	6AU6	68K	0Ω	0Ω	.2Ω	†3800Ω	†12K	150Ω		
V4	6AL5	1.6meg	2.3meg	0Ω	.2Ω	1.6meg	0Ω	2.3meg		
V5	12BH7A	†1000Ω	2.7meg	150Ω	0Ω	0Ω	1meg	1meg	470K	.2Ω
V6	12BH7A	†1000Ω	2.7meg	150Ω	0Ω	0Ω	†68K	1meg	0Ω	.2Ω
V7	12BH7A	†1000Ω	3.2meg	0Ω	0Ω	0Ω	45K	45K	14.5Ω	.2Ω

† MEASURED FROM OUTPUT OF M1.

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REMOTE CONTROL RECEIVER CH. V-2386-1, -2

TV
PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6	V8	Audio Det.	6DT6
V2	2nd Video IF Amp.	6BZ6	V9	Audio Output	6BQ5
V3	3rd Video IF Amp.	6DK6	V10	Vert. Mult. - Vert. Output	12DT5
V4	Video Output - Sync Sep.	6EB8	V11	Horiz. Mult.	6CG7
V5	Sound Amp. - Sync Amp. - Noise Inverter	6FV8	V12	Horiz. Output	12DQ6A
			V13	Damper	12D4
V6	AGC Keying	6BZ6	V14	HV Rect.	1G3GT
V7	Sound IF - Vert. Mult.	6FV8	V15	LV Rect.	5U4GB

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	Westinghouse PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V16	21EMP4 23BP4 *					* Chassis V-2379-1, -2, -3

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲100	350	218V046H01	AFH4-56-90	D0473	FP420. 29	TMQ-140	TVL-4625	
B	■40	350							
C	▲4	350							
D	100	50							
C2A	▲100	350	218V045H01	AFH4-57-55	D0479. 2	FP385. 5 TC48	TMQ-194	TVL-3842. 6 TVA-1718	
B	■30	350							
C	▲10	350							
D	40	25							
C3	60	50NP	218V025H35	PRS6550	BR10015 †	TC3501 †		TVANS-1309.2*	①
C4	30	50NP		PRS6500	BR6015 †			TVANS-1306.2*	①

① C4 not used in some versions. Later production models use 86-96MFD @ 50VAC NP to replace C3 and C4 (Part #218V025H43).

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit, the same as the original non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C6	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C7	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP210	5HK-D10
C8	47 N750		N750-DI 47	DTZ-47	C10Q47U	CCTN-470	CNO-447	10TCU-Q47
C9	6.8 NPO		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-468	10TCC-V68
C10	10 NPO 5%		NPO-DI 10	DTZ-10	C10QIC	CM-15-C-100J	CNO-410	10TCC-Q10
C11	47 NPO 5%			DTZ-47	C10Q47C	CM-15-E-470J	CNO-447	10TCC-Q47
C12	10 NPO 5%		NPO-DI 10	DTZ-10	C10QI0C	CM-15-C-100J	CNO-410	10TCC-Q10
C13	43 NPO 5%			TCZ-43	C10Q43C	CM-15-E-430J		MS-443
C14	800		BPD-0008	DD-801	L10T8	CCD-801	GP382	10TS-T80
C15	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C16	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C17	800		BPD-0008	DD-801	L10T8	CCD-681	GP382	10TS-T80
C18	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP110	5HK-D10
C19	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C20	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C21	2.2 5%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C22	68 NPO 10%		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C23	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP210	5HK-D10
C24	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C25	560		DI-560	DD-561	L10T56	CCD-561	GP356	10TS-T56
C26	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP210	5HK-D10
C27	560	Note 1	DI-560	DD-561	L10T56	CCD-561	GP356	10TS-T56
C28	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C29	680		BPD-00068	DD-681	BYA10D15	CCD-681	GP368	10TS-T68
C30	4.7 N750 ±.25mmf		N750-DI 4.7	DTN-5	C10V5U	CCTN-4R7	CN7-4R7	10TCU-V50
C31	10 NPO 5%		NPO-DI 10	DTZ-10	C10QIC	CM-15-E-100J	CNO-410	10TCC-Q10
C32	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C33	56		DI-56	DD-560	L10Q56	CCD-560	GP456	10TS-Q56
C34	.22 400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C35	10000 2000V						2HY-110	
C36	100 N220 10%	#215V011A01				*		10TCR-T10
C37	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP368	10TS-T68
C38	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C39	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C40	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C41	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C42	470	(.0015mfd) †	BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C43	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C44	1000		BPD-001	DD-102	BYA10QI	CCD-102	GP210	5HK-D10
C45	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C46	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C47	.0047 600V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C48	3.3mfd	Note 2						
C49	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33
C50	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C51	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C52	.0027 600V		P688N-003	D6-272	CUB6D3	6DP-1-272	GEM-623	6TM-D3

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: ARROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C53	.001 600V		P568N-001	DD-102	CUB024	6DP-1-103	GEM-52	8TM-D
C54	.033 600V 10%		V34C5633-10%		P34S33	6DP-1-333	GEM-163	8TM-S33
C55	.033 400V		P568N-033	DD-203	CUB0333	6DP-2-333	GEM-4133	4TM-S33
C56	.047 300V		P368N-047	DD-503	CUB3S47	6DP-3-473	GEM-3047	3TM-S47
C57	.033 400V		P568N-033	DD-203	CUB4S33	6DP-3-333	GEM-4133	4TM-S33
C58	.047 600V		P568N-047	DD-503	CUB5S47	6DP-3-473	GEM-4147	4TM-S47
C59	.15 300V		P368N-.15		CUB3P15	6DP-3-154	GEM-3015	3TM-P15
C60	10000 300V		BPD-D1	DD-103	BYA10S	CCD-103	GPU10	51EK-S10
C61	.1 300V		P368N-1	DF-104	CUB3P1	3DP-3-104	GEM-301	3TM-P1
C62	1000 10%		5469-001		1N51	563-1N51-101K	MC1353	MD-2
C63	18-180	④2TV508B20				563		
C64	68 NPO 10%		NPO-D1 68	DT2-68	CHQ68S	563-680	CND-468	10TCC-Q68
C65	10000		BPD-D1	DD-103	BYA10S	CCD-103	GPU10	51EK-S10
C66	.047 400V		P568N-047	DD-503	CUB4S47	6DP-4-473	GEM-4147	4TM-S47
C67	.0047 600V (.003 Req'd)	①	P568N-0047	DS-473	CUB4D47	5DP-1-472	GEM-5347	5TM-D47
C68	300 5000V 1%3300 5%	⑤2SV30018D						
C69	.22 600V		P568N-022		CUB4P22	6DP-3-225	GEM-5032	6TM-P22
C70	.047 600V		P568N-047	DD-503	CUB6S47	6DP-3-473	GEM-4147	6TM-S47
C71	4700	Note 1	BPD-0047	DD-472	BYA10D47M	CCD-473	GP347	51EK-D47
C72	.033 600V		P568N-033	DD-203	CUB6S33	6DP-3-333	GEM-4133	6TM-S33
C73	1000	Note 1	BPD-001	DD-102	BYA10S1	CCD-103	GPE10	51EK-D10

Westinghouse Part Number † Alternate
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. May not be used in some versions.
Note 2. Chassis V-2378-3, -4, -5 and Chassis X 2nd3 in this application. Not used in single speaker versions.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K		270V507S801					Volume Note 1
	50K Tap							(Not used)
	Switch							Power Off-On
R1A	300K		270V049S05	F1-33	RTV-701		⑦ GU-1262	⑧ GE6119 Contrast
B	8000			R3-S1				Brightness
R2A	6K		270V049S06	F1-30	RTV-702		⑦ GU-1266	Horiz. Hold Note 2
B	2meg			R3-67				Vert. Hold Note 2
R4A	5meg		270V049S04	A2-87	B47-5meg-S		BU-141	PTA5S1. Vert. Height
B	Shaft			A2-19	Not Req.		TM4	Not Req.
R3A	500K		270V032S806	A2-59	B47-500K-S		BU-153	PTA5V1. Vert. Linearity
B	Shaft			A2-19	Not Req.		TM4	Not Req.

Note 1: Used in Chassis V-2378-3, -6. Later production models use Part #270V07S803.
Chassis V-2378-1, -3 uses dual Volume, Tapped Tone, with Switch (Part #270V05L8S03).
Chassis V-2378-2, -4 uses dual Volume, Tapped Tone, with Switch (Part #270V05L8S04).
Note 2: Some versions may use Part #270V06S804.
† "Concentrite" equivalent: K-15 Kit with base elements and shafts: S11-139, P71-031 (Panel)
Tape Clamp, P11-105, S11-111 (Rear)
† "Concentrite" equivalent: K-15 Kit with base elements and shafts: S11-139, P71-031 (Panel)
(Not available as a factory assembled unit.) S11-139, S11-111 (Rear)
* "RTA-LOC" equivalent: FA351, BU135, C08S7A, 12K47.
▲ "RTA-LOC" equivalent: FA7S31, BU381, C08S7A, 12K47.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R1	560meg		R35	22K		R84	27K	
R2	33meg		R36	15K		R85	180Ω	
R3	5.6meg		R37	68K		R86	220Ω 1W	
R4	1.5meg		R38	47000 1W		R87	560Ω	
R5	10K		R39	10K 2W		R88	560Ω	
R6	18meg		R40	1meg		R89	(RG Cold)	#690V01LH08
R7	2.2meg		R41	560Ω		R90	39K	
R8	33K		R42	68000 1W		R91	680K	
R9	270Ω		R43	47K		R92	47K	
R10	470K		R44	470K		R93	47K 1W	
R11	22K		R45	33K		R94	33K	
R12	33000		R46	33000		R95	1000Ω 1W	
R13	47K		R47	100K 1W		R96	1000Ω 1W	
R14	470K		R48	1meg 1W		R97	180K	
R15	33K		R49	180K		R98	56K	
R16	47K 1W		R50	560K		R99	1meg	
R17	68K		R51	47K 1W		R100	150K	
R18	33000		R52	820Ω		R101	18K 2W	
R19	33000		R53	10000		R102	39K 1W	Note 1
R20	68000		R54	270Ω		R103	47000 2W	
R21	1meg	#25LV04J05	R55	150K	Note 1	R104	6.7Ω	
R22	680000		R56	150K		R105	1meg	
R23	5400Ω 7W	#25LV04J05	R57	150K		R106	470Ω 3W	
R24	27K 2W		R58	82K		R107	470Ω 3W	
R25	10K		R59	22K 1W		R108	330K	"
R26	390K		R60	2.2meg 1W		R109	100Ω	
R27	180K		R61	1.2meg		R110	1.1Ω 1W	Note 1
R28	33K		R62	82K		R111	560Ω 5W	
R29	15K		R63	1meg				

Westinghouse Part Number. Note 1. May not be used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	REPLACEMENT DATA: Westinghouse PART No.	
X1	Sync Sep. Grid	330mmf, 330K	21SV004J06	
X2	Sync Sep. Grid	330mmf, 1meg	21SV004J05	Centralab RC-431 Sprague PRC-3
X3	Vert. Integrator	330mmf, 470mmf, 39K, 47K	21SV037J01	
X4	Horiz. AFC	47mmf, 680mmf, 390mmf, 180mmf, 56mmf, 560K, 680K, 22K, 10K	21SV031J03	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	41.25MC Trap	23SV076H01						
L2	47.25MC Trap	23SV076H02	17-4538	17-4538	TV-153	6335		
L3	1st Video IF	23SV076H03	17-4532	17-4532	TV-150	6334		
L4	47.25MC Trap	23SV076H01	17-4538	17-4538	TV-153	6335		
L5	2nd Video IF	23SV076H04						
L6	39.75MC Trap	23SV076H05	17-4539	17-4538	TV-153	6335		
L7	3rd Video IF	23SV076H06						
L8	4th Video IF	23SV076H07						
L9	RF Choke	23SV019S03	19-1006	19-1006		4634		14uh
L10	RF Choke	23SV019S02	19-1006	19-1006		4634		14uh
L11	RF Choke	23SV019S04	19-1008	19-1008	SW-551	4609		4.7uh Note 1
L12	Shunt Peaking Coil	23SV034S09	19-3300	19-3300	TV-200	6133	VP-7	330uh
L13	Series Peaking Coil	23SV034S06	19-4301	19-4301	TV-197	6154		200uh
L14	RF Choke	23SV019S03	19-1006	19-1006	RC-581	4603		1.1uh
L15	4.5MC Trap	23SV030S03						
L16	Series Peaking Coil	23SV034S03	19-3125	19-3125	TV-196	6130	VP-5	140uh
L17	Shunt Peaking Coil	23SV034S09	19-3300	19-3300	TV-200	6132	VP-7	330uh
L18	Series Peaking Coil	23SV034S09	19-3300	19-3300	TV-200	6132	VP-7	330uh
L19	1st Sound IF	23SV030S07						
L20	2nd Sound IF	23SV041S01						
L21	Quadrature Coil	23SV030S05						
L22	RF Choke	23SV019S02	19-1006	19-1006		4634		14uh
L23	RF Choke	23SV019S02	19-1006	19-1006		4634		14uh

Note 1. May not be used in some versions.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA: Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
	PRI.	SEC.							
L24	100Ω		23SV032H01	HS-16				HS-16	Horiz. Stabilizer

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 (+)	REPLACEMENT DATA: Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
L25	.305A	25Ω	.5H	23SV064H01						C-34X

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
T1	117V ① 1.7A	560VCT ② .300A	5V ③ 3A	41SV012H01						
	SEC. 3	SEC. 4	SEC. 5							
	13.6VCT ④ 7.5A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.
T2	Vert. Output	43SV039H02	26875 ①	A-385 ②				26875 ①	A-103X
	Alt. Vert. Output	43SV039H01	26875 ①	A-385 ②				26875 ①	A-103X
T3	Yoke-Horiz. (23MC) (10°)-Vert. (13MC)	43SV039H03	Y-53 ③ ⑤					Y-53 ③ ⑤	Y-53 & NW-1 ⑤
	Rear Cover and Centering Device	78SV344H01							YC-10
	Yoke Clamp	78SV344H02							
	Horiz. Output	43SV006H01	FLY-96 *					FLY-96 *	D-808 *

① Use 9 to 1 turns ratio.
② Use 8 to 1 turns ratio.
③ Connect same as original.
⑤ Use original rear cover and centering device.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Tried Replacement Connections
2	6				6	6	
1	4				4	5	
4	4				4	4	
6	T				T	T	
3	3				3	3	
7	2				2	2	
8	1				1	1	
Special Item ⑤						⑤	

⑤ If AGC does not function properly, reverse connections to terminals #2 and #4.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Tried PART No.	NOTES
T5	8600Ω	8-50	43SV053H01	24906	A-2901	AU-600	A-3849	24906	S-53X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: Westinghouse PART No.	QUAM PART No.	NOTES
SP1	8"	PM	4-5Ω	57SV043H03	8A8J25.5	Used in Models H-K4503, H-K4600, H-K4603, H-K4000 thru H-K4203, H-K4601, H-K4602, H-K4605, H-K4606, H-K4800
SP2	5"	PM	12-14Ω	57SV047H02	5A07Z13.5	Used in Models H-K4400 thru H-K4403, H-K4100 thru H-K4103, H-K4105, H-K4300, H-K4301
	6" x 8"	PM		57SV070S01		Used in Models H-K4401, H-K4300
	4"	PM		57SV068S01		Used in Models H-T3700, H-K3701, H-T3702

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: Westinghouse PART No.	INTERNATIONAL PART No.	IIT PART No	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1		29SV004H01 *	SD-91 *	K1815 *			*Dual Selenium Diode +Silicon Diode, 2 req'd

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: Westinghouse FUSE	Westinghouse HOLDER	LITTELFUSE FUSE	LITTELFUSE HOLDER	BUSS FUSE	BUSS HOLDER
M3	N	3½ 125 V 5/8	75SV001H07		313.03. (N 3½ 125V 5/8)	348018	N 3½	(BN)3½ to 3½
M3		1" length of #36 wire						
M4		1" length of #36 wire						

CRYSTAL DIODES

ITEM No.	CRRC TYPE	REPLACEMENT DATA: Westinghouse PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M5	1N398	29SV006H01	1N398	1N398	1N398	Video Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M6	Tuner	870V964H01	VHF, Ch. V-2378-5, -6, V-2379-3
	Tuner	670V064H01	(Standard Coil Replacement Part No. GQ-4320A) VHF, Ch. V-2378-1, V-2378-3, V-2379-1
	Tuner	870V063H01	(Some Models may use Tuner #870V064H01 as alternate) VHF, Ch. V-2378-2, V-2379-2, V-2378-4
M7	Switch	745V044J01	UHF
	Switch	775V044J01	Master Off-On, Chassis V-2378-5 & -6
	Switch	775V150H01	Bass, Chassis V-2378-3, -4 & -5
	Switch	775V150H01	Treble, Chassis V-2378 -3, -4 & -5
M8	Switch	785V041H01	Hold (Part of Motor Drive Assembly)
M9	Switch	765V040H01	Push Bar (Part of Motor Drive Assembly)
M10	Solenoid	753V003H01	(Part of Motor Drive Assembly)
M11	Motor	753V001H01	Drive Includes Direction Switch (Part of Motor Drive Ass'y)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO
Safety Glass	630V008H01
Mask	610V017H02
Mask	610V077H04
Knob	580V127H01
Knob	580V127H01
Knob	580V128S01
Knob	580V015H01
Knob	580V128H01
Knob	580V114H02
Knob	580V113H06
Knob	580V123H01
Knob	580V123H05
Knob	580V113H01
Knob	580V113H03
Knob	580V113H04
Knob	580V066H01
Knob	584V069H02
Bar Push	584V387H01
Cabinet	518V168H01
Cabinet	518V196H01
Cabinet	518V092H01
Cabinet	518V087H03
Cabinet	518V046H01
Cabinet	518V104H01
Cabinet	518V140H01
Cabinet	518V102H01
Cabinet	518V102H01

WESTINGHOUSE CHASSIS V-2378-1, -2, -3, -4, -5, -6, V-2379-1, -2, -3, V-2386-1, V-2387-1

FOLDER 2

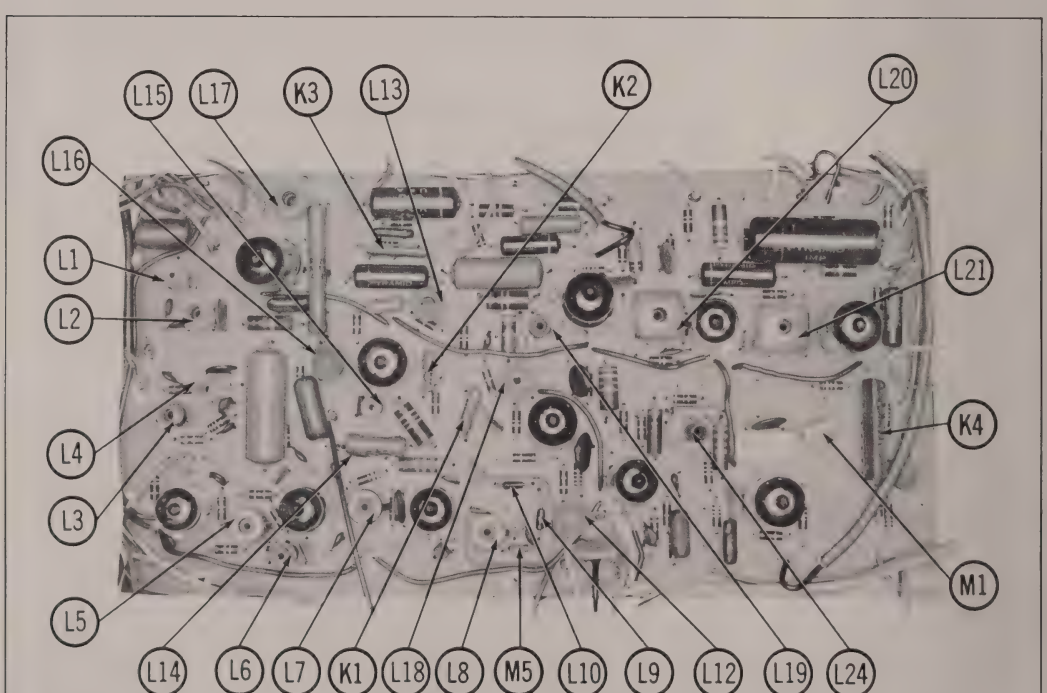
CABINETS & CABINET PARTS (cont)

NAME	PART NO.	DESCRIPTION
Cabinet	516V126H03	Model H-K4600
Cabinet	516V126H01	Model H-K4601
Cabinet	516V126H02	Model H-K4602
Cabinet	516V161H01	Model H-K4103
Cabinet	516V157H01	Model H-K4800
Cabinet	516V095H03	Model H-T3700
Cabinet	516V095H01	Model H-T3701
Cabinet	516V095H02	Model H-T3702
Cabinet	516V084H03	Model H-K4000
Cabinet	516V084H01	Model H-K4001
Cabinet	516V084H02	Model H-K4002
Cabinet	516V094H01	Model H-K4100
Cabinet	516V083H01	Model H-K4101
Cabinet	516V082H02	Model H-K4102
Cabinet	516V090H02	Model H-K4200
Cabinet	516V085H01	Model H-K4201
Cabinet	516V090H01	Model H-K4202
Cabinet Base	690V012H70	Model H-K4100
Cabinet Legs	690V012H64	Model H-K4001 (Front)
Cabinet Legs	690V012H65	Model H-K4001 (Rear)
Cabinet Legs	690V012H66	Model H-K4002 (Front)
Cabinet Legs	690V012H67	Model H-K4002 (Rear)
Cabinet Legs	690V012H68	Model H-K4000 (Front)
Cabinet Legs	690V012H69	Model H-K4000 (Rear)

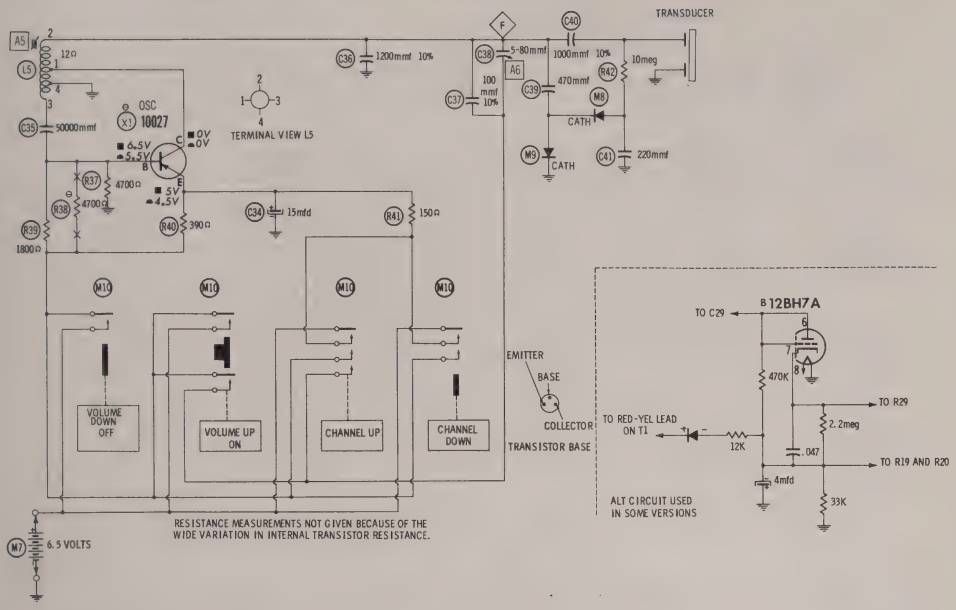
Note 1. Models H-T3700, -1, -2, H-K4000, -1, -2, H-K4100, -1, -2, H-K4200, -1, -2, H-K4103, H-K4300.
Note 2. Models H-K4400, -1, -2, -3, H-K4500, -1, -2, -3, H-K4600, -1, -2, H-K4300, H-K4800.

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



PRINTED BOARD—INDUCTOR & MISCELLANEOUS IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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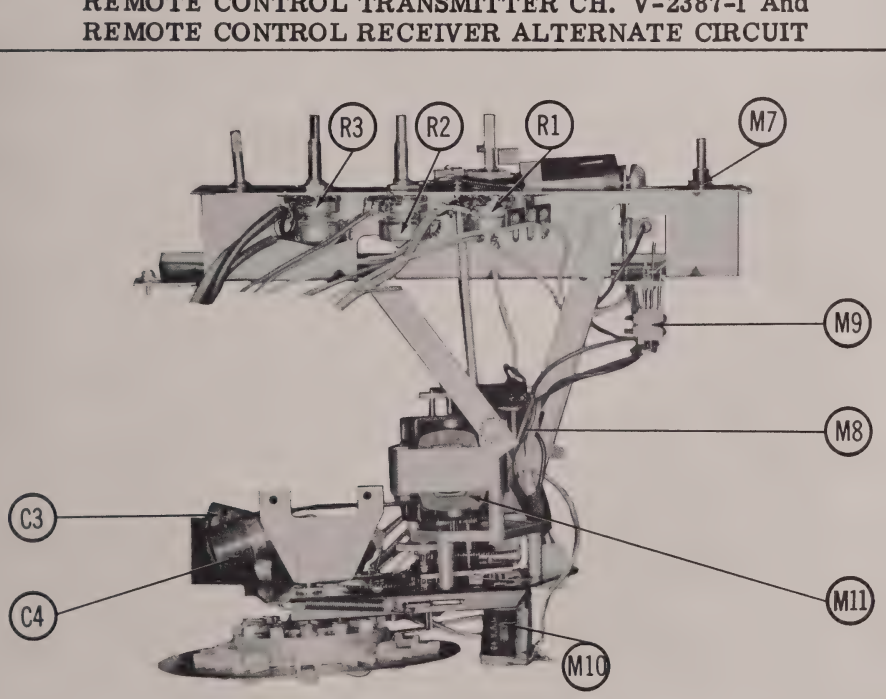
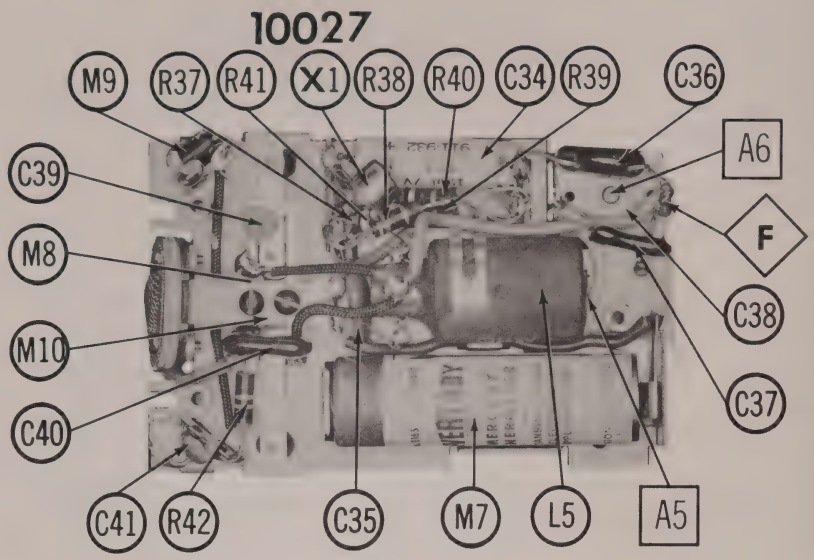
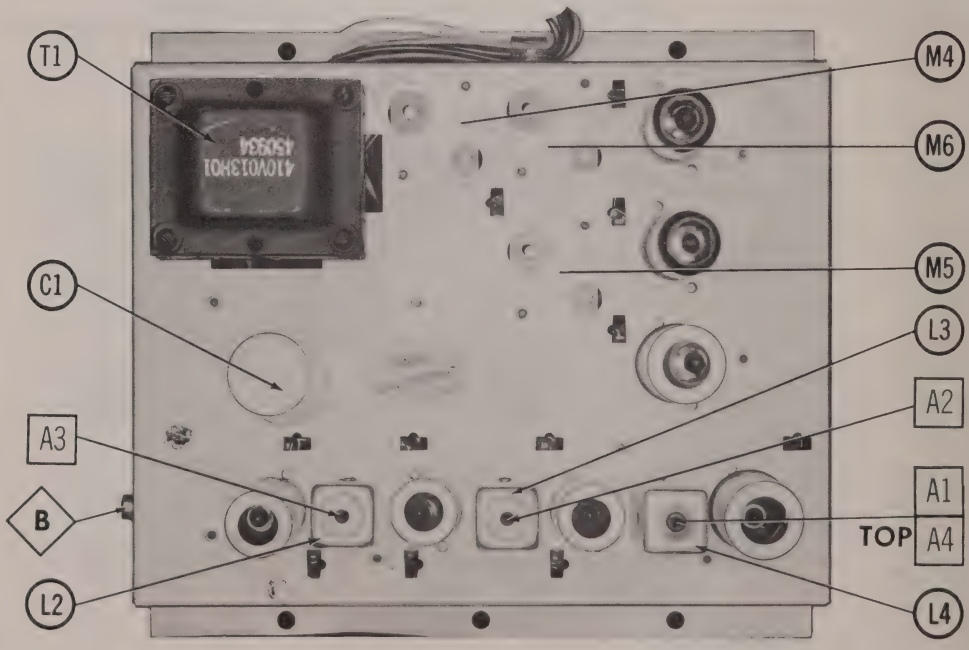
REMOTE CONTROL TRANSMITTER CH. V-2387-1 And REMOTE CONTROL RECEIVER ALTERNATE CIRCUIT



CONTROL PANEL And POWER TUNING MECHANISM



REMOTE CONTROL TRANSMITTER CH. V-2387-1



REMOTE CONTROL RECEIVER CH. V-2386-1 - TOP VIEW

REMOTE CONTROL TRANSMITTER
PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Westinghouse PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L5	Osc. Coil	230V082H01						

BATTERIES

ITEM No.	VOLTAGE	Westinghouse PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M7	6.5					E165		TR165	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Westinghouse PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M8		296V007H01	2E4	HA154	K200	SR200	Silicon
M9		296V007H01	2E4	HA154	K200	SR200	Silicon

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M10	Switch	756V043H01	Function
M11	Magnet	757V503H01	(Rear of Case)
	Transducer Ass'y	753V011H01	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Pushbutton	550V121H01	
Case	513V056H01	

REMOTE CONTROL
ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: A1 thru A4 ..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

REMOTE CONTROL RECEIVER ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point (A). Positive to chassis.

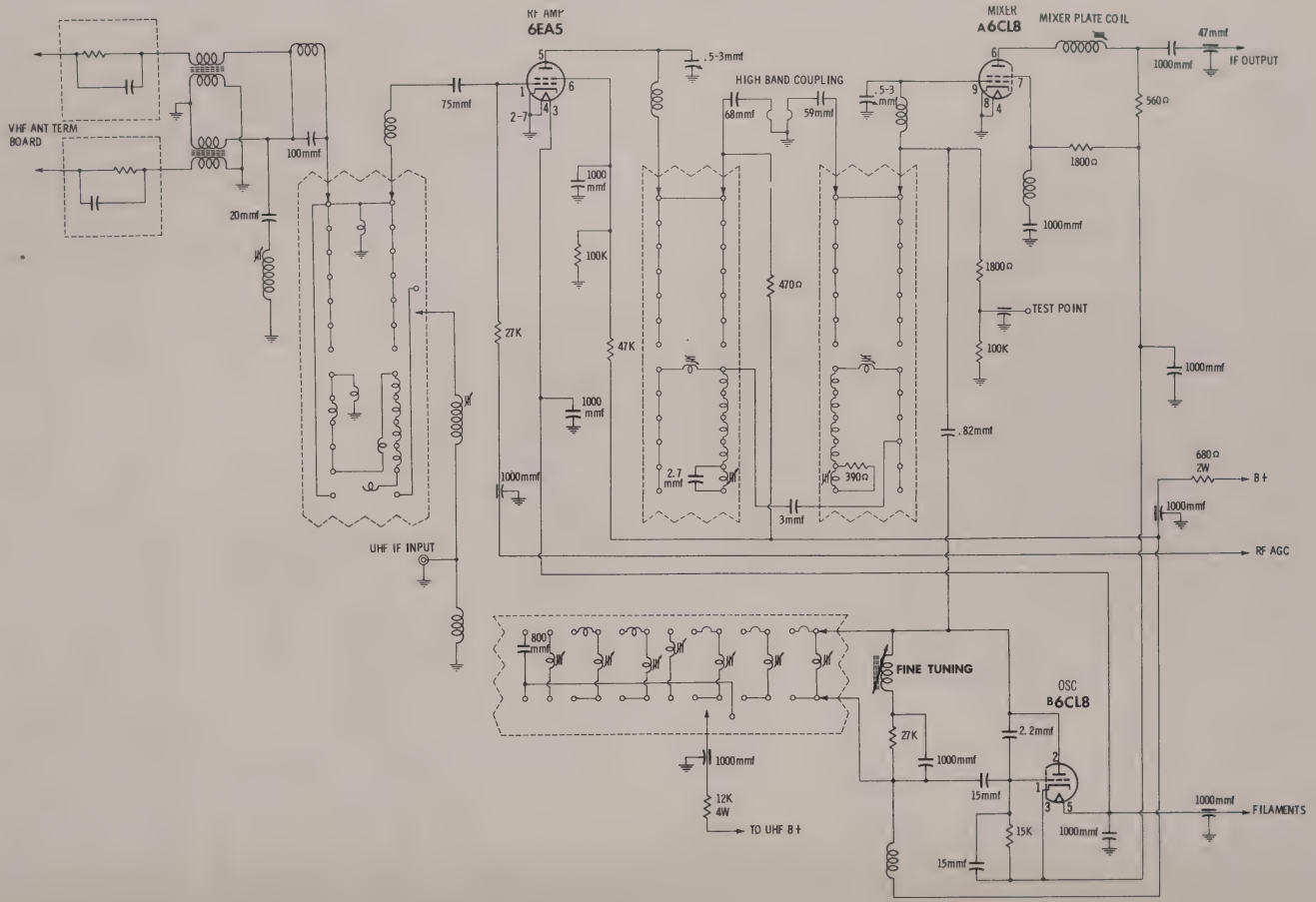
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	High side to point (B). Common to chassis. (Unplug transducer.)	40KC (Unmod.)		DC probe thru 1meg to point (C). Common to chassis.	A1, A2, A3	Adjust for maximum deflection. Use peak with slug nearest chassis.
2.	"	"		DC probe to point (D). Common to point (E).	A4	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

PRE-ALIGNMENT INSTRUCTIONS

Suggested Alignment Tools: A5 ..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A6 ..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

REMOTE CONTROL TRANSMITTER ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across horizontal terminals of scope.	41KC		Vert. Amp. thru low capacity probe point (F). Low side to chassis.	A5	Depress "Channel Down" button and adjust vertical and horizontal gain controls of scope for equal deflection. Adjust A5 until the Lissajous pattern is a stationary oval, leaning either to the left or to the right.
2.	"	39KC		"	A6	Depress "Channel Up" button and adjust for stationary oval leaning to the left or right.



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VHF TUNER With UHF Provisions - 470V063H01

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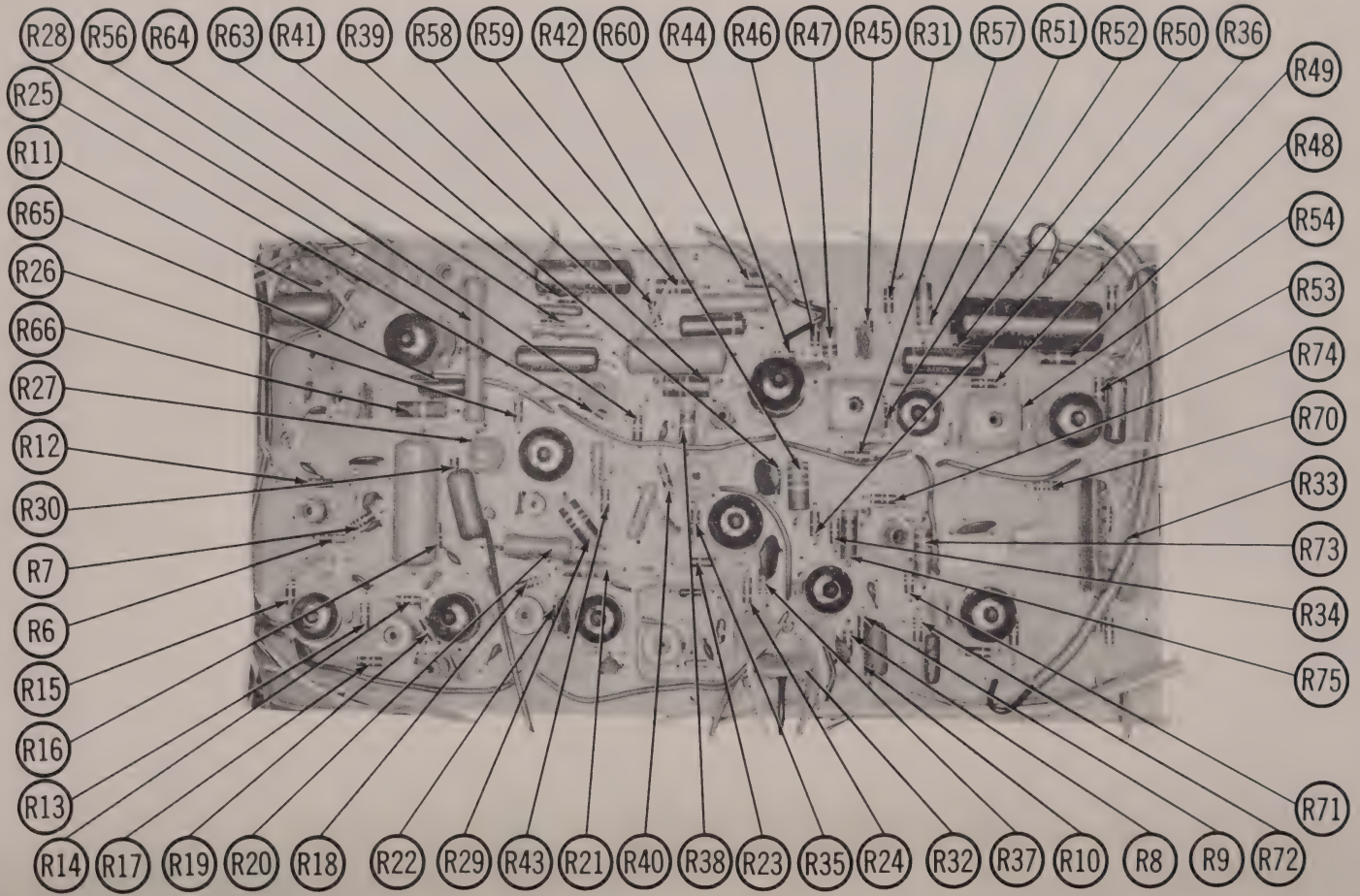
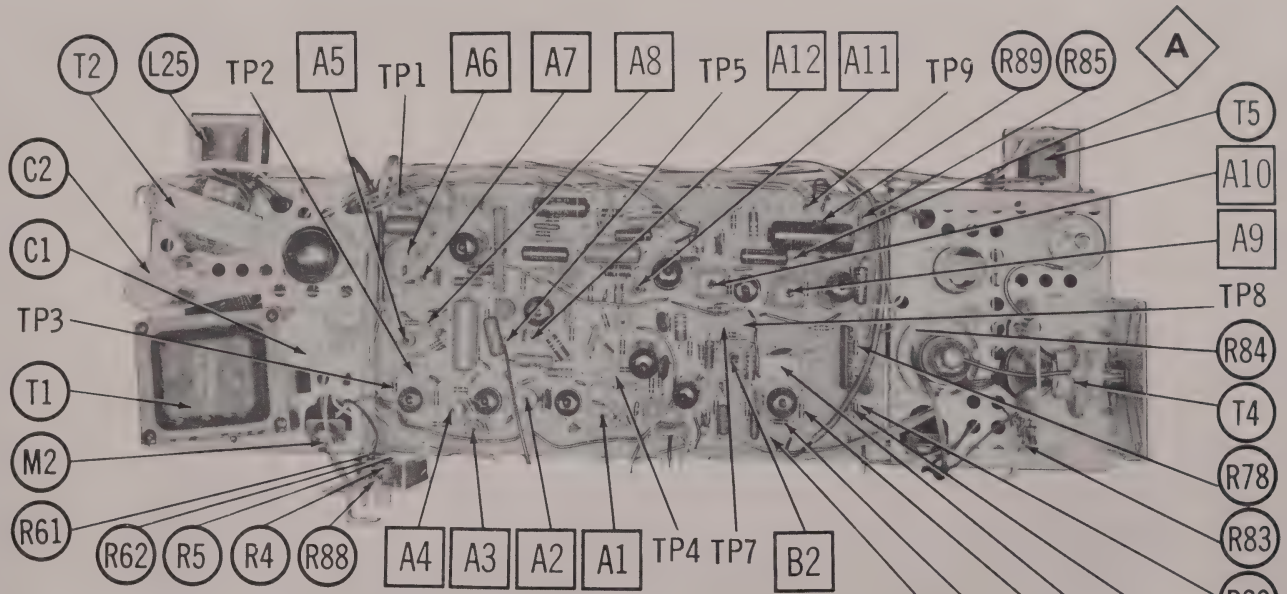


PRINTED BOARD - RESISTOR IDENT.

PRINTED BOARD - CAPACITOR IDENT.



TP1	.35V	TUNER AGC			
TP2	0V	IF AGC	TP6	1.1V	HORIZ MULT AFC GRID
TP3	0V	1st IF GRID	TP7	255V	HORIZ MULT PLATE
TP4	-.85V	VIDEO DET OUTPUT	TP8	255V	HORIZ MULT B+
TP5	55V	PIX TUBE CATH	TP9	0V	AUDIO DET OUTPUT

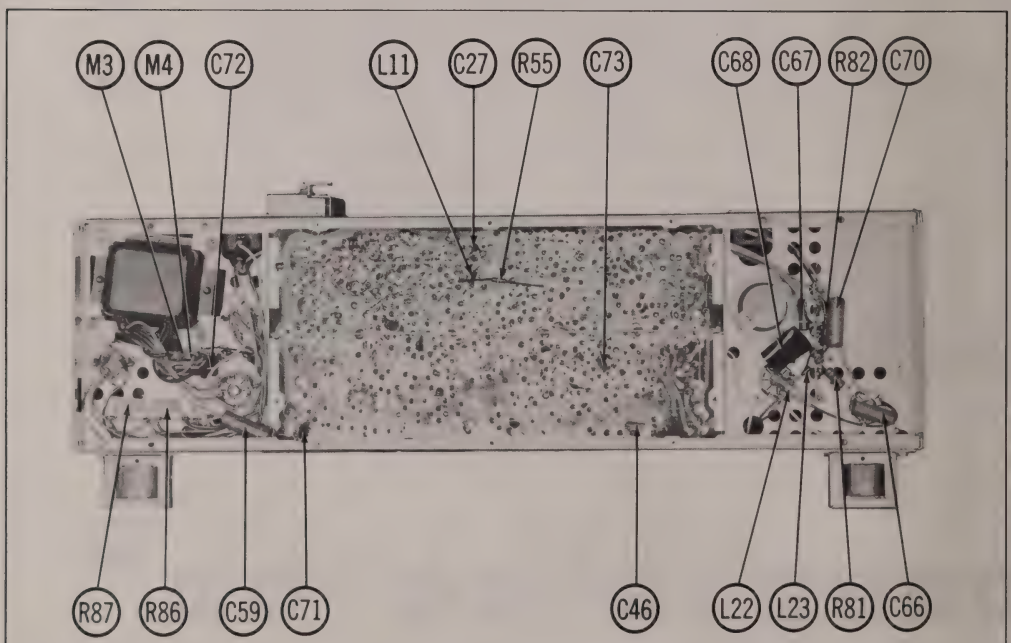
TV CHASSIS - TOP VIEW

RESISTANCE MEASUREMENTS

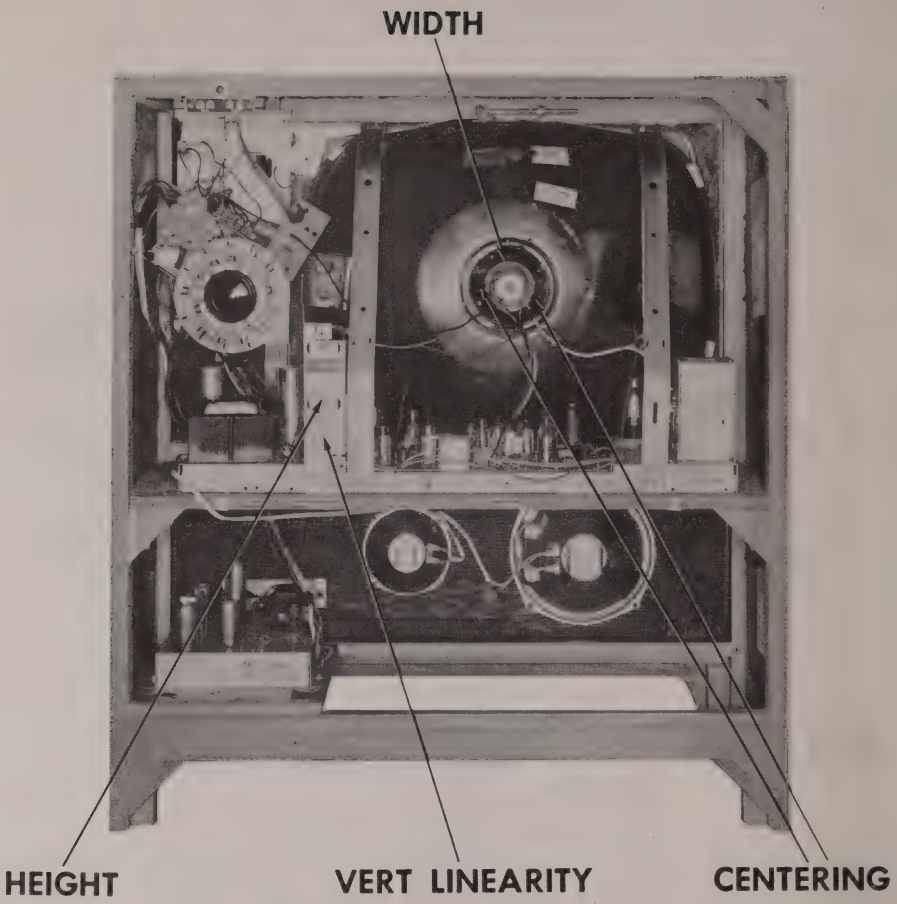
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	335K	47Ω	.1Ω	0Ω	▲270Ω	▲270Ω	0Ω		
V2	6BZ6	60K	▲12Ω	.1Ω	0Ω	†470Ω	†470Ω	INF		
V3	6DK6	.1Ω	150Ω	.1Ω	0Ω	†10K	†47K	0Ω		
V4	6EB8	0Ω	2.5meg	†75K	0Ω	.1Ω	• 40Ω	1meg	†27K	†5400Ω
V5	6FV8	3.5meg	†37K	5600Ω	0Ω	.1Ω	†15K	†25K	0Ω	2400Ω
V6	6BZ6	†37K	†13K	.1Ω	0Ω	2.1meg	†0Ω	†13K		
V7	6FV8	• 1.2meg	•† 6.5meg	0Ω	.1Ω	0Ω	†150K	†70K	0Ω	470K
V8	6DT6	4.5Ω	820Ω	.1Ω	0Ω	† 2meg	†47K	560K		
V9	6BQ5	1000Ω	1000Ω	270Ω	0Ω	.1Ω	NC	†1000Ω	NC	†1500Ω
V10	12DT5	†500Ω	NC	•1meg	.2Ω	.2Ω	• 1meg	220Ω	NC	†800Ω
V11	6CG7	†57K	• 190K	1000Ω	0Ω	.1Ω	†48K	1.9meg	1000Ω	0Ω
V12	12DQ6A	NC	.2Ω	NC	†18K	1meg	NC	.2Ω	0Ω	TOP CAP †16.1Ω
V13	12D4	NC	NC	¶6.5meg	NC	†1.1Ω	NC	.2Ω	.2Ω	
V14	1G3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †716Ω
V15	5U4GB	TP	¶	NC	21Ω	NC	23Ω	NC	¶	
V16	21EMP4	0Ω	120K	†1meg	0Ω	NC	NC	• 230K	.1Ω	
V201	6ER5 GG	0Ω	2.4meg	0Ω	.1Ω	†6600Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	†16K	0Ω	0Ω	.1Ω	†6600Ω	†28K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
† MEASURED FROM PIN 8 OF V15.
† MEASURED FROM PIN 3 OF V13.

NC NO CONNECTION
TP TIE POINT



TV CHASSIS BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a short clip lead across the Horizontal Stabilizing coil (L24).

Set the Horizontal Hold control to the center of its range.

Connect the DC probe of a VTVM to point Ⓑ . Common to chassis.

Tune in a TV station and adjust the Horizontal Oscillator trimmer (B1) for zero volts on the VTVM. If zero can be approached but not reached, set the Horizontal Hold control slightly to one side of center for zero voltage.

Remove the jumper from L24 and adjust the Horizontal Stabilizing Coil Slug (B2) for zero reading on the meter. Check lock-in action by switching from channel to channel. The picture should pull into synchronization on all channels.

DISASSEMBLY INSTRUCTIONS

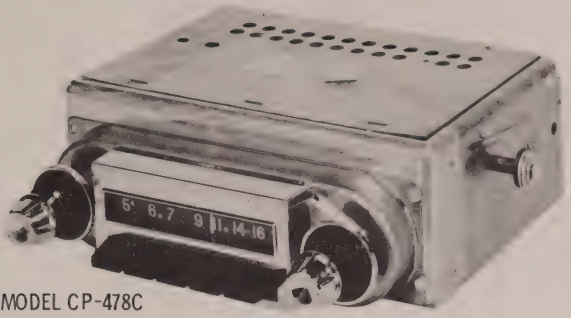
CHASSIS REMOVAL MODEL H-K4600

1. Remove 4 wood screws and 3 metal screws holding rear cover. Remove rear cover.
2. Remove 8 push-on type knobs from the front of the cabinet.
3. Remove remote control chassis plug, speaker leads, and remove 1 wood screw holding antenna terminal bracket.
4. Remove 3 metal screws holding front control bracket, 2 at top and 1 at bottom. Remove 2 wood screws holding tuner bracket to cabinet.
5. Remove 4 chassis bolts from the bottom of chassis.
6. Remove TV chassis.
7. Remove 2 nuts holding remote control mic bracket.
8. Remove 4 screws holding remote control chassis.
9. Remove remote control receiver chassis.

PICTURE TUBE REMOVAL

1. Remove chassis.
2. Remove hi voltage lead, picture tube socket, and yoke clamp.
3. Loosen picture tube mounting strap.
4. Remove picture tube.

PHOTOFACT® Folder



MODEL CP-478C

TRADE NAME	Automatic	Model	Automobile
		BP-668	1957-1958 Buick
		C-338C, CP-478C	1958 Chevrolet
		CT-387	1957 Chevrolet
		CTR-6A	1955-1956 Chevrolet
		DTX-67A, DTX-68	1957-1958 Dodge
		EP-108	1958 Edsel
		F-128, F-128C, FP-238, FP-238C	1958 Ford
		FT-227	1957 Ford
		MT-47C	1957 Mercury
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.		
TYPE SET	Battery Operated 4 Tube - 1 Transistor Automobile AM Receiver		
POWER SUPPLY	12 Volt Storage Battery RATING 1.4 Amp. @ 12.6 Volts DC		
TUNING RANGE — BROADCAST	538 - 1610KC		

AUTOMATIC MODELS BP-668, C-338C, CP-478C,
CT-387, CTR-6A, DTX-67A, DTX-68, EP-108,
F-128, F128C, FP-238, FP-238C, FT-227, MT-47C

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1 thru A4..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	265KC (Pushbutton Models) 455KC (Manual Models) (400~ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1610KC	"	"	A5	"
3.	Antenna receptacle thru dummy (Fig. 1.)	"	"	"	A6, A7	"
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station
2. Pull button out, then press in firmly.
3. Repeat for remaining buttons.

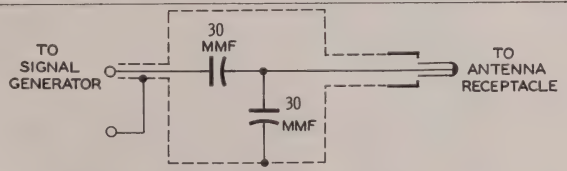


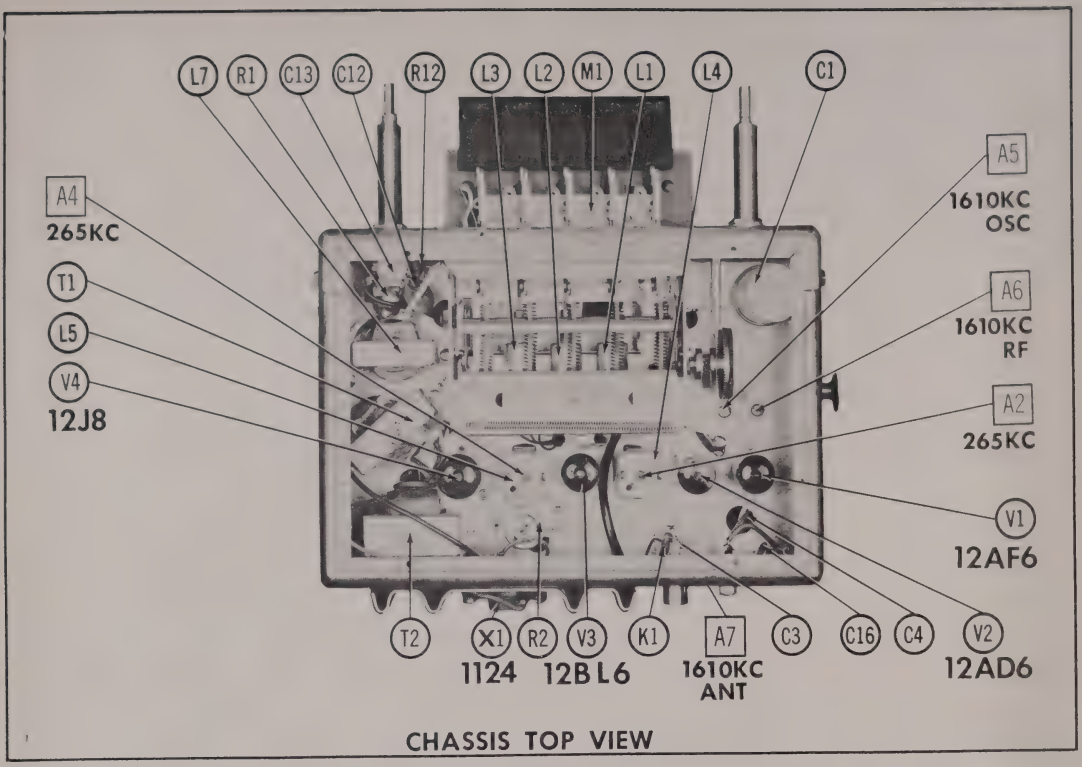
FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

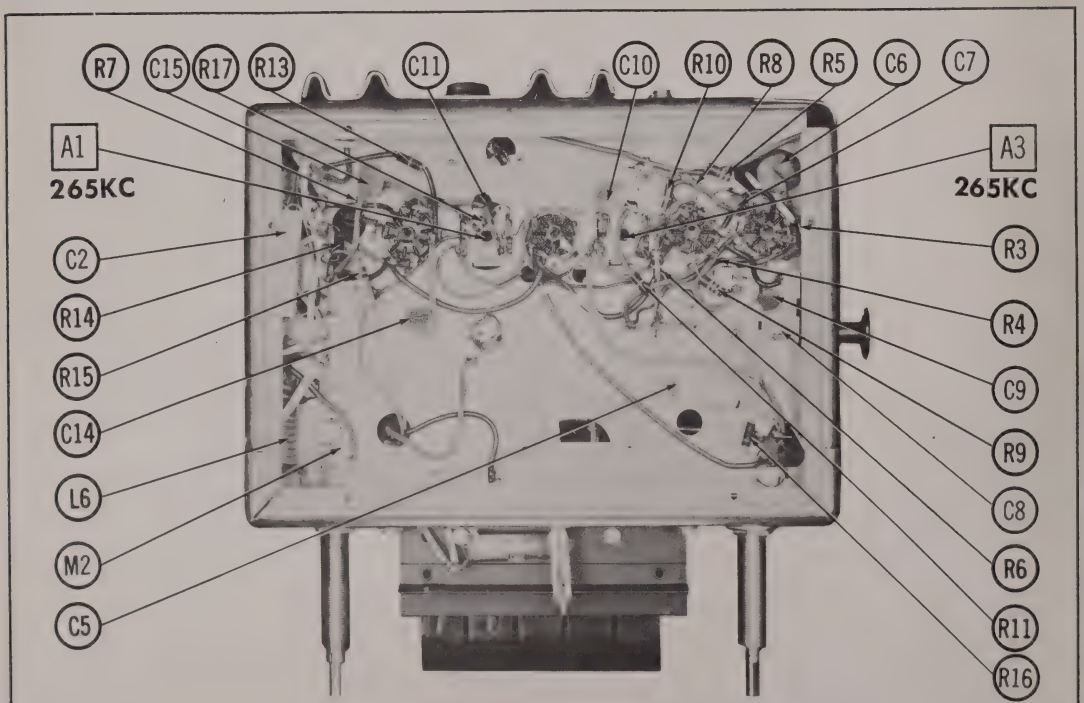
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JD696

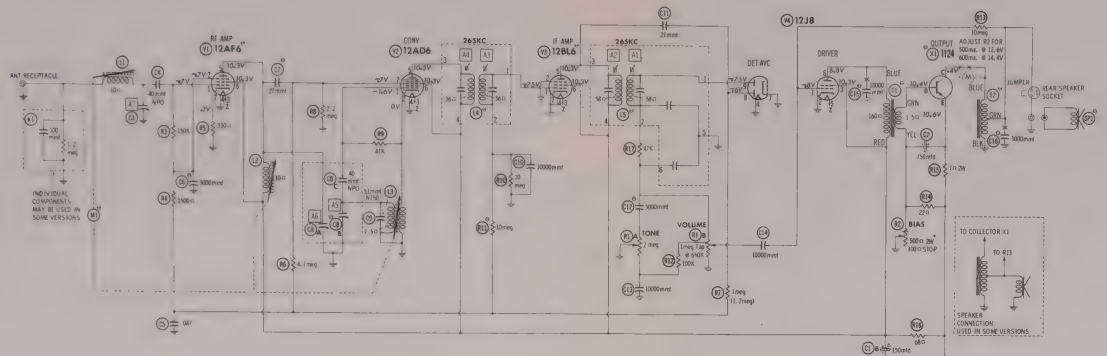
SET487 FOLDER 3



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-



❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

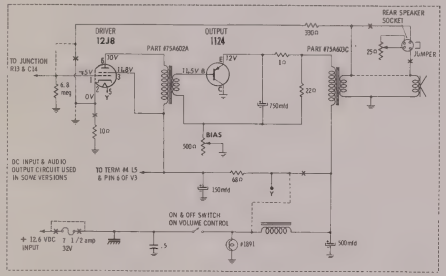
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

STEP	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
×1	12AF6	5.5meg	5.4meg	2.0	0.0	1800	1680	330Ω		
×2	12AD6	47K	7.0	0.0	7.0	1705 Ω	1680	2.2meg		
×3	12BL6	5.5meg	0.0	0.0	7.0	1250 Ω	1680	0.0		
×4	12J8	10meg	0.0	1680	2.0	0.0	1250 Ω	0.0	1.6meg	1meg

† MEASURED FROM JUNCTION OF R16 AND C14. TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE


DRIVER 12J8
OUTPUT 1124
PART #75A602A
PART #75A603C
REAR SPEAKER SOCKET
JUMPER
TO JUNCTION R13 & C14
BIAS
DC INPUT & AUDIO OUTPUT CIRCUIT USED IN SOME VERSIONS
TO TERM #4 L5 & PIN 6 OF V3
ON & OFF SWITCH ON VOLUME CONTROL
+ 12.6 VDC INPUT
7 1/2 amp 32V

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AUTOMATIC MODELS BP-668, C-338C, CP-478C, CT-387, CTR-6A, DTX-67A, DTX-68, EP-108, F-128, F128C, FP-238, FP-338C, FT-227, MT-47C

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12AF6 (12BL6) *①	V3	IF Amplifier	12BL6 (12AF6) *
V2	Converter	12AD6	V4	Det. -AVC-Driver	12J8

① Model MT-47C uses 12CX6 in this application and may be used in Model BP-668.
* Alternate.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	1124 *	Output	2N236B			2N242	PNP

* Type CT1122 used in Model BP-668, DTX-68
Type 2N257 used in Model EP-108, FP-238, F-138, FT-227, CT-387, CTR-6A
Type MN25 used in Model MT-47C
Type X1005 used in Model DTX-67A
Type 1124 used in Model CP-478C, C-338C, FP-238C, F-128C

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■500	15	20-315	PWE2-02-75		WP200.7		TVLS-2155 *	
B	▲150	15							
C2	750	3	20-757	SRE3V500	BR1000-6	PETA190	TD-1000-6	TVAS-1097 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3		#28-800						
C4	40 NPO		NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C5	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C6	3000	①	DI-3000	DD-302	BYA10D3	CCD-302	GP230	5HK-D30
C7	27	②	DI-27	DD-270	L10Q27	CCD-270	GP427	10TS-Q27
C8A								
B		#28-4028③						
C	40 NPO		NPO-DI 39	TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C9	51 N750			TCZ-51	C10Q51C	CCTO-510	CNO-450	
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C11	27		DI-27	DD-270	L10Q27	CCD-270	GP427	10TS-Q27
C12	3000	④	DI-3000	DD-302	BYA10D3	CCD-302	GP230	5HK-D30
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C15	10000	⑤	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C16	3000	⑤	DI-3000	DD-302	BYA10D3	CCD-302	GP230	5HK-D30

① Not used in Models EP-108, BP-668, DTX-68, FP-238, F-128, FT-227, CT-387, MT-47C, DTX-67A, CTR-6A.
② Not used in Model C-338. Models EP-108, BP-668, MT-47C use 12mmf in this application.
③ Used in Models C-338C, CP-478C, F-128C, FP-238C. Other Models use separate items: C8A Part #28-400, C8B Part #28-281 or Part #28-3 (specify), C8C Part #15-400.
④ Models EP-108, BP-668, MT-47C use 2000mmf in this application.
Models DTX-68, FP-238, F-128, FT-227, CT-387, DTX-67A, CTR-6A use 1500mmf in this application.
⑤ Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	1/2	80A663				UE4089-S	Tone Note 1
B	1meg	1/2						Volume Note 1
C	650K Tap Switch							Power Off-On
R2	500Ω 100Ω Stop	2(WW)	62-501		39-500-100	112-500-100	FL-600S	Bias

Note 1. Model CTR-6A uses 2 meg Tone, 1meg Volume with switch (Part #80-69).
Model MT-47C uses 2 meg Tone, 1meg Volume with switch (Part #80A699A).
Model CT-387 uses 2meg Tone, 1meg Volume with switch (Part #80A656A).
Model EP-108 uses 2meg Tone, 1meg Volume with switch (Part #80A833).
Model FT-227, FP-238, -C, F128, -C, use 2meg Tone, 1meg Volume with switch (Part #80A618).

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	150K	
R4	1500Ω	
R5	330Ω	
R6	4.7meg	
R7	1meg	(1.2meg) *
R8	2.2meg	
R9	47K	
R10	10meg	
R11	10meg	Note 1
R12	100K	
R13	10meg	
R14	22Ω	
R15	1Ω 2W	
R16	68Ω	
R17	47K	

* Alternate Value.
Note 1. Models BP-668, DTX-68, FP-238, F-128, FT-227, CT-387, DTX-67A, and CTR-68 use a 2.2meg in this application.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA
K1	Antenna Filter	100mmf, 1.2meg	89-4204	Note 1 Sprague PRC-9

Note 1. Some versions may use individual components in this applications.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	†						
L2	RF Coil	†						
L3	Osc. Coil	†						
L4	Input IF Trans.	14-265①	16-6752	16-6752	BC-350	12-H1	RF-3	
L5	Output IF Trans.	14-267①	16-6754	16-6754	BC-354	12-H6		
L6	A Lead Hash Choke							1.1uh

† Part of Tuner M1.
① Used in Models CP-478C, EP-108, BP-668, DTX-68, FP-238, FP-238C, MT-47C, DTX-67A, & CTR-6A.
Part #14-1655-6 used in Models C-338C, F-128, F-128C, FT-227, CT-387.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L7	1.25A	.9Ω	.008HY	75A601						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO: PRI.	SEC.	REPLACEMENT DATA: AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	15	1	75A602A①						

① Alternate Part #75A602B. Models BP-668, C-338C, CP-478C, CTR-6A, DTX-68.
Part #75A602B used in Models EP-108, F-128, F-128C, FP-238, FP-238C.
Part #75A602 used in Model MT-47C.
Part #75A604 used in Models FT-227, DTX-67A, CT-387.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA: AUTOMATIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	14Ω Tap ⓐ 3-4Ω	75A966①							

① Used in Models C-338C, CP-478C, F-128C, FP-238C.
Part #75A603C used in Models EP-108, DTX-68, BP-668, FP-238, F-128.
Part #75A805 used in Model CTR-6A.
Part #75A603 used in Models MT-47C, FT-227, DTX-67A, CT-387.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: AUTOMATIC PART No.	QUAM PART No.	NOTES
SP1	6"x 9"	PM	3-4Ω	73-902 *	69A3	* Models C-338C, CP-478C, MT-47C, CTR-6A, FT-227, CT-387, F-128, F-128C
	6"x 9"	PM		73C913 ♦		♦ Model BP-668
	6"x 9"	PM		73B902 ♯		♯ Models FP-238C, FP-238, EP-108
	5"x 7"	PM		73B654 †		† Models DTX-67A, DTX-68

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M1	Tuner	78A846	Pushbutton, Model CP-478C
	Tuner	78A858	Manual, Model C-338
	Tuner	78-448	Pushbutton, Model BP-668
	Tuner	78-69RX1711	Pushbutton, Model MT-47C
	Tuner	78A835 (or) 78A4839	Pushbutton, Model EP-108
	Tuner	78315 (or) 78-315R	Pushbutton, Models DTX-67A, CTR-6A
	Tuner	78-315	Pushbutton, Model DTX-68
	Tuner	78-90 (or) 78-490	Pushbutton, Models FP-238, FP-238C
	Tuner	78-326	Manual, Models F-128, F-128C
	Tuner	78-325	Manual, Model FT-227
	Tuner	78B691	Manual, Model CT-387
M2	Spark Plate		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: AUTOMATIC PART No. FUSE	AUTOMATIC PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
	SFE	7/8A 32V	108-100 *		307007.5	155009	SFE 7/8	HHH

* Used in Models CTR-6A, DTX-67A, MT-47C, & BP-668.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	48A889	Control; Models C-338C, CP-478C
Knob	48A-646	Control; Models BP-668, CTR-6A, DTX-68, DTX-67A
Knob	47B392	Control, Model CT-387
Knob	47-148	Control, Model FT-227
Knob	47-50	Control; Models FP-238, F-128C, FP-238C, F-128
Knob	47B392W	Control, Model MT-47C
Knob	47B319-2W	Control, Model EP-108
Knob	48A891	Tone; Models C-338C, CP-478C
Knob	48A648	Tone; Models CTR-6A, DTX-68, DTX-67A, BP-668
Knob	47B393	Tone, Model CT-387
Knob	48B393	Tone; Models FT-227, F-128, F-128C, FP-238, FP-238C, MT-47C
Knob	48-395	Tone, Fader, Model EP-108
Knob	48A891-1	Dummy; Models C-338C, CP-478C
Knob	48A648-1	Dummy; Models CTR-6A, DTX-68, DTX-67A
Knob	47B393-1	Dummy, Model CT-387
Knob	48B393-1	Dummy; Models FT-227, F-128, F-128C, FP-238, FP-238C
Dial Scale	39-668	Model BP668
Dial Scale	39-47	Model MT47C
Dial Scale	39-67	Models DTX-67A, CTR-6A
Dial Pointer	84-120	Models MT-47C, CTR-6A
Dial Pointer	84A517	Model DTX-67A

PHOTOFACT® Folder

EICO MODELS
HF-61, HF-61A

MODEL HF-61A

EICO MODELS
HF-61, HF-61A

TRADE NAME	Eico Models HF-61, HF-61A
MANUFACTURER	Electronic Instrument Co., Inc., 33-00 Northern Blvd., Long Island City 1, N. Y.
TYPE SET	Model HF-61: AC Operated 4 Tube Preamplifier Model HF-61A: Externally Powered 3 Tube Preamplifier
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles (Model HF-61 Only)

SET487 FOLDER 4

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JW633

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Phono Preamplifier	ECC83/12AX7	V3	AF Amplifier	ECC82/12AU7A
V2	AF Amp.-Cathode Foll.	ECC82/12AU7A			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA EICO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	400	24005	AFH3-43-50	C0344	FP376.9	TMT-39	TVL-3786	
B	■40	350							
C	▲40	350							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C3	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104	GEM-401	4TM-P1
C4	850 10%		DI-820	DD-821	1R5T82	CCD-821	GP382	10TS-T82
C5	3300 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C6	5000 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C7	500 10%		DI-500	DD-501	5R5T5	CCD-501	GP350	10TS-T50
C8	2700 10%		DI-2700		PM6D3	CCD-272	GEM-1623	10TS-D27
C9	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C10	6800 10%		DI-6800		PM6D68	CCD-682	GEM-16268	10TS-D68
C11	1200 10%	Note 1	DI-1200	DD-122	1R5D12	CCD-122	GP212	10TS-D12
C12	5000 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C13	10000 10%	Note 2	DI-10000		PM6S1	CCD-103	GEM-1611	10TS-S10
C14	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C15	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C16	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C17	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C18	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C19	5000 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C20	6000 10%				PM6D6	6DP-1-602	GEM-1626	6TM-D6
C21	25000				ST6S25	6DP-3-253	GEM-6125	5HK-S25
C22	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C23	20000		BPD-02	DD-102	BYB6S2	CCD-203	GP120	5HK-S20
C24	.25 400V 10%		V84C4P25-10%		PM4P25	4DP-5-254	GEM-4025	4TM-P25
C25	.25 400V 10%		V84C4P25-10%		PM4P25	4DP-5-254	GEM-4025	4TM-P25

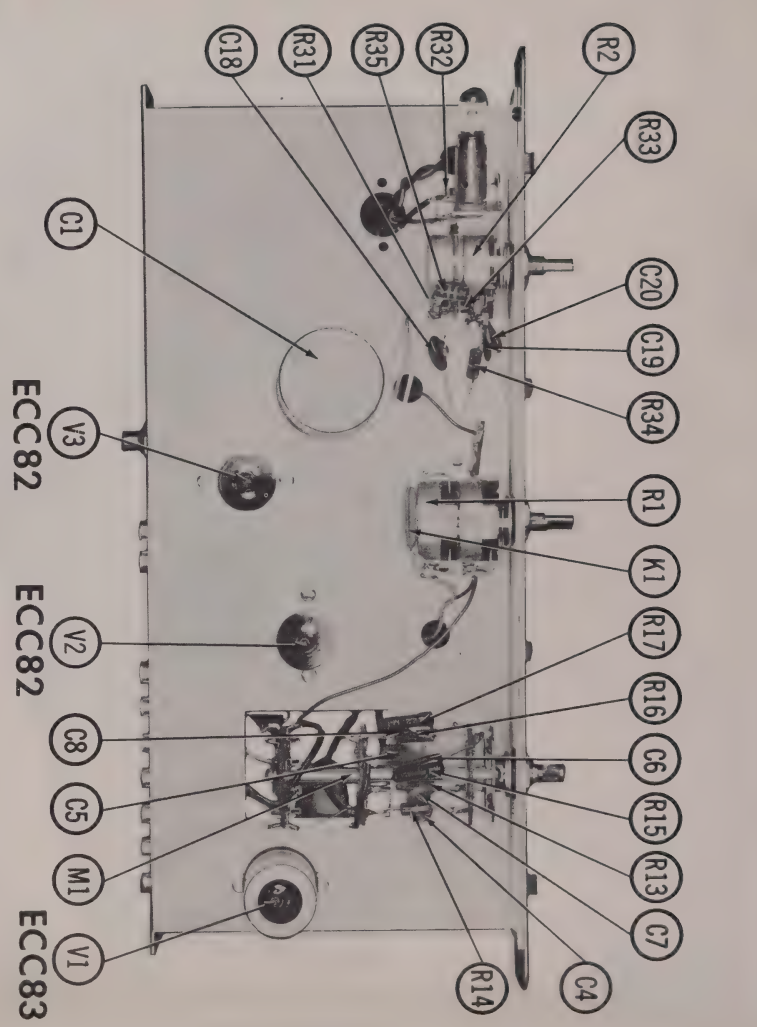
Note 1. Model HF-61 uses 10000mmf in this application.
Note 2. Model HF-61 uses 1200mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA EICO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K		18024			† QJ-1150R	■ UE4093	Level
B	500K *							Loudness
R2A	1meg		18025	F1-51				Bass
B	500K			R4-52		‡ QJ-1251R	▲ UE4094	Treble
	250K Tap							
R3A	100Ω	2(WW)	19009	WN-101	A43-100	W11-084	R100L	Hum Adjust
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	

* Taps @ 200K & 350K.
† "Concentrikit" equivalent: K-6 kit with base elements & shafts: B13-133, P14-019, (Panel). (Not available as a factory assembled unit) B13-133XX, R1-028 (Rear).
‡ "Concentrikit" equivalent: K-6 kit with base elements & shafts: B11-137, P14-019 (Panel). (Not available as a factory assembled unit) B19-133X, R1-028 (Rear).
■ "STA-LOC" equivalent: FA55A, RU55DT354, OS562A, IS1000.
▲ "STA-LOC" equivalent: FA16L, RU55T254, OS562A, IS1000.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	68K	
R5	120K	
R6	68K	
R7	47K	
R8	200K 5%	
R9	3000Ω 5%	
R10	2.2meg	
R11	200K 5%	
R12	2200Ω	
R13	90K 5%	
R14	100K 5%	
R15	4.7meg 5%	
R16	560K 5%	
R17	2.2meg 5%	

ITEM No.	RATING	REMARKS
R18	1meg	
R19	6800Ω	
R20	10K	
R21	10meg	
R22	1meg 5%	
R23	100K	
R24	180K 5%	
R25	33K 5%	
R26	150K 5%	
R27	150K 5%	
R28	100K 5%	
R29	150K	
R30	3300Ω	
R31	68K	

ITEM No.	RATING	REMARKS
R32	47K	
R33	68K 5%	
R34	470K 5%	
R35	68K 5%	
R36	100K	
R37	3300Ω	
R38	1meg	
R39	2200Ω	
R40	47K	
R41	470K	
R42	68K 5%	
R43	100K	
R44	10K 1W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EICO PART No.	REPLACEMENT DATA
K1	Loudness Comp.	100mmf, 200mmf, 4500mmf, 4500mmf, 50K, 50K	29750	Aerovox PA-682 Centralab PC-324 Sprague TC-4

MISCELLANEOUS

ITEM No.	PART NAME	EICO PART No.	NOTES
M1	Switch	60038	Input Selector
M2	Switch	62003	Rumble Filter (2 Pole 3 Position, Slide Type)
M3	Switch	62003	Scratch Filter (2 Pole 3 Position, Slide Type)
M4	Switch	62000	Phono Selector (DPDT, Slide Type)
M5	Switch	62001	Off-On (SPST, Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

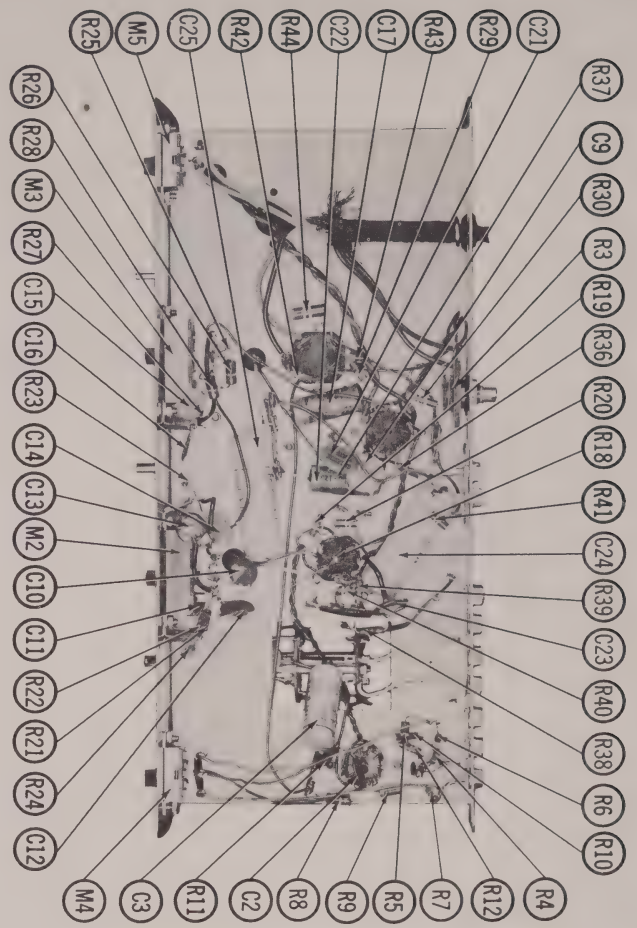
NAME	PART NO.	DESCRIPTION
Knob	53010	Loudness, Treble
Knob	53009	Level, Bass
Knob	53014	Input Selector

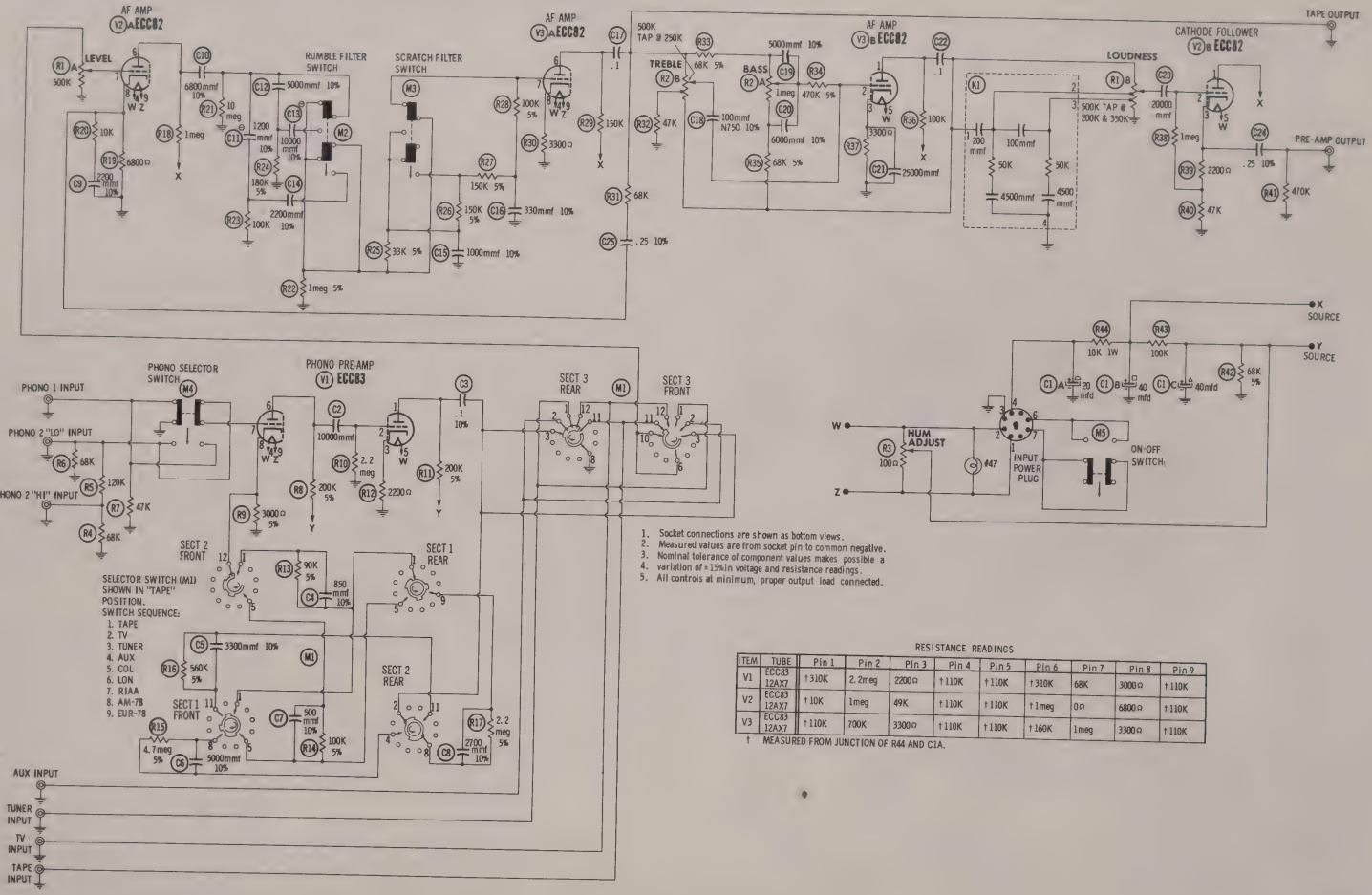
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





1. Socket connections are shown as bottom views.
2. Measured values are from socket pin to common negative.
3. Nominal tolerance of component values makes possible a
4. variation of ±15% in voltage and resistance readings.
5. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†310K	2.2meg	2200Ω	†110K	†110K	†310K	68K	3000Ω	†110K
V2	ECC83 12AX7	†10K	1meg	49K	†110K	†110K	†1meg	0Ω	6800Ω	†110K
V3	ECC83 12AX7	†110K	700K	3300Ω	†110K	†110K	†160K	1meg	3300Ω	†110K

† MEASURED FROM JUNCTION OF R44 AND C1A.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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EICO MODELS HF-61, HF-61A

PHOTOFACT® Folder

FIRESTONE MODEL 4-H-3
(Code 334-8-OA16A/5P10A)

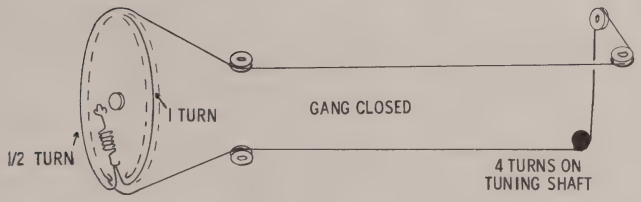
FIRESTONE MODEL 4-H-3
(Code 334-8-OA16A/5P10A)

FIRESTONE MODEL 4-H-3
(Code 334-8-OA16A/5P10A)

TRADE NAME	Firestone Model 4-H-3 (Code 334-8-OA16A/5P10A)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron 17, Ohio
TYPE SET	AC Operated 10 Tube FM-AM Tuner, 7 Tube Audio Amplifier And 4 Speed Automatic Record Changer
POWER SUPPLY	105 - 125 Volts AC, 60 Cycles RATING 180 Watts, 1.66 Amp. @ 117 Volts AC (FM-AM)
TUNING RANGE-BROADCAST	535 - 1620KC FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #28A226 — SEE V-M 1200 — PHOTOFACT SET 290 FOLDER 11 OR RECORD CHANGER MANUAL CM-7

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JM180R2

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
Set Level, Bass and Treble at center of their ranges. Set Contour Control fully clockwise.
Suggested Alignment Tools: A1 thru A4, A8 thru A15 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5 thru A7, A16 thru A18 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 1 (grid) of AM RF Amp. Low side to chassis.	455KC (400~ Mod.)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	"	A5	"
3.	"	"	1400KC	"	Tune to 1400KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.
4.		Loop	"	"	"	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.005mfd	High side to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	FM	Tuning gang fully open	DC probe thru 100K to point (A). Common to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe thru 100K to point (B). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.005mfd	High side to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully open	Vert. Amp. thru 100K to point (A). Low side to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	"	"	Vert. Amp. thru 100K to point (B). Low side to chassis.	A15	Adjust so that 10.7MC marker occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across FM antenna terminals with 120Ω in each lead.	108MC (400~ FM Mod.)	FM	Tuning gang fully open	Across voice coil	A16	Adjust for maximum output.
8.	"	"	105MC	"	105MC	"	A17, A18	Adjust for maximum output while rocking tuning gang.

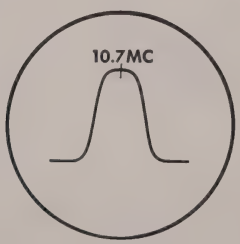


FIG. 1

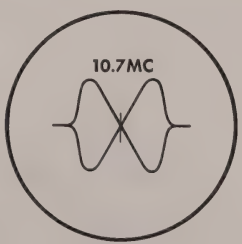
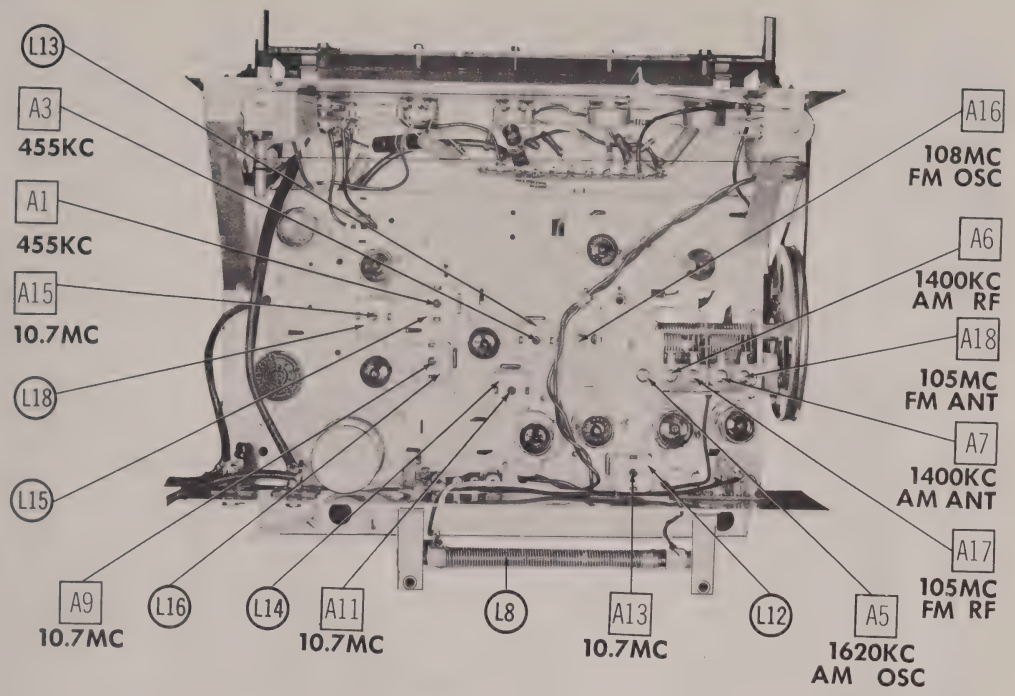
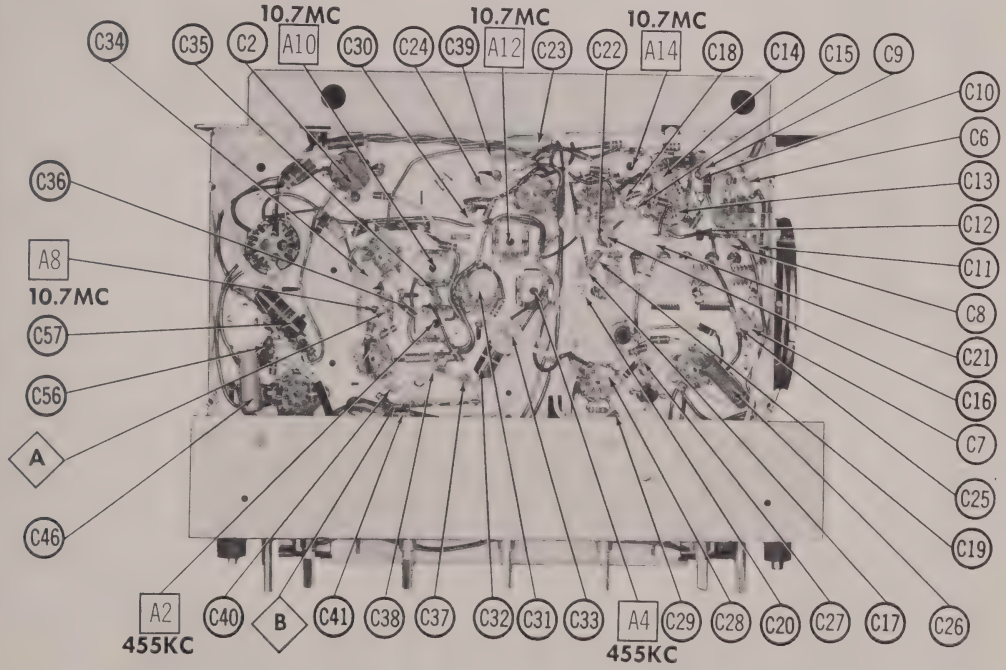


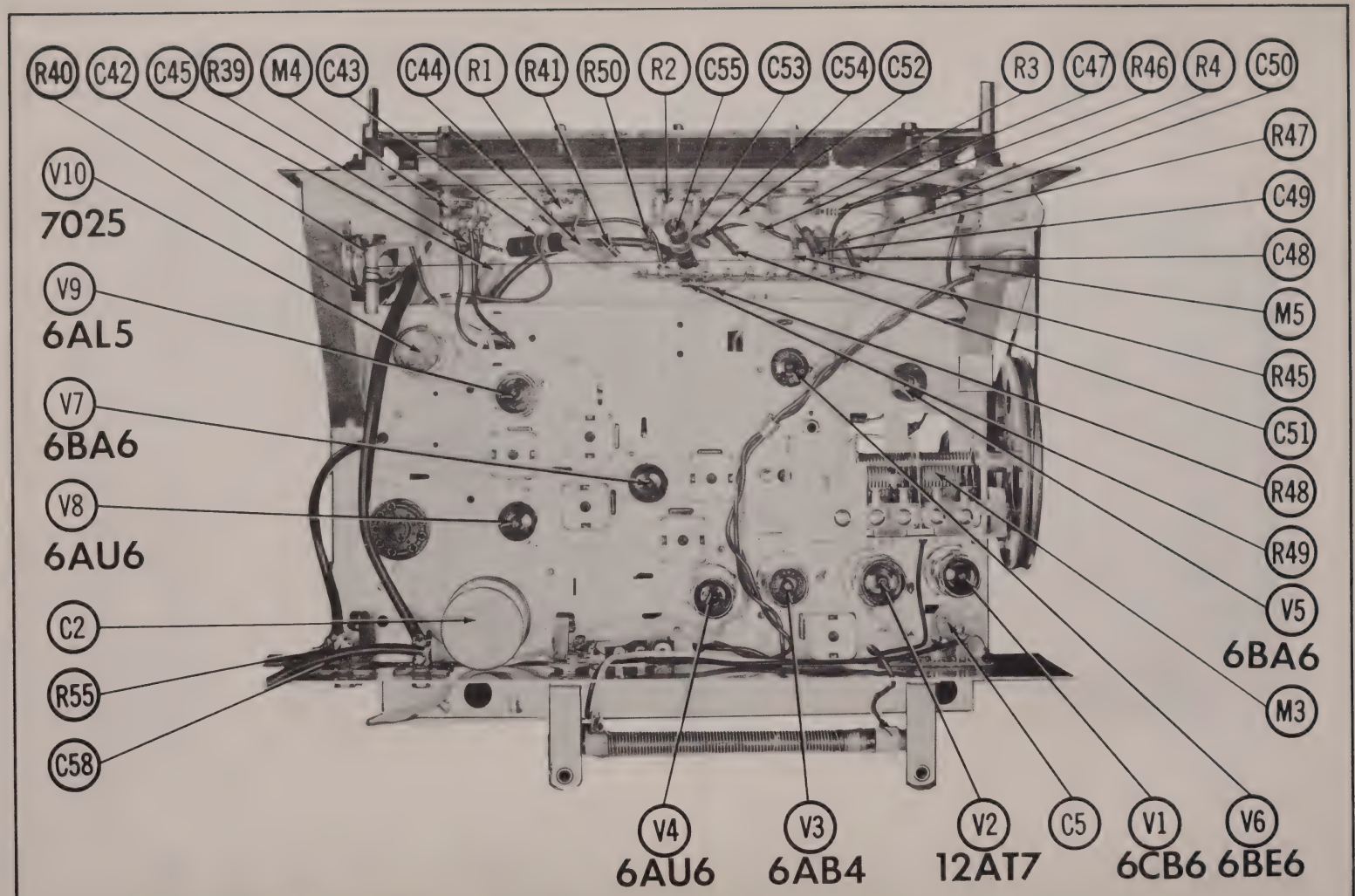
FIG. 2



TUNER CHASSIS TOP VIEW - INDUCTOR AND ALIGNMENT IDENT.



TUNER CHASSIS BOTTOM VIEW - CAPACITOR AND ALIGNMENT IDENT.



TUNER CHASSIS TOP VIEW - CAPACITOR, RESISTOR, MISC & TUBE IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6CB6	
V2	FM Mixer - FM AFC	12AT7	
V3	FM Oscillator	6AB4	
V4	1st FM IF Amplifier	6AU6	
V5	AM RF Amplifier	6BA6	
V6	AM Converter	6BE6	
V7	2nd FM -1st AM IF Amp.	6BA6	
V8	FM Limiter -		
	AM Det. - AVC	6AU6	

ITEM No.	USE	TYPE	NOTES
V9	Discriminator	6AL5	
V10	AF Amplifier	7025	
V11	AF Amp. - Phase Inv.	12AX7	
V12	Output	EL84/6BQ5	
V13	Output	EL84/6BQ5	
V14	Output	EL84/6BQ5	
V15	Output	EL84/6BQ5	
V16	Rectifier	5Y3GT	
V17	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	400	45X450			FP375.4		TVLS-4671.1*	
B	■40	400				TC78			
C	▲40	400							
D	40	200							
C2A	▲20	350	45X452	AFH3-43-50	C0344	FP376.9	TMT-39	TVL-3786	
B	■40	200							
C	▲40	200							
C3	100	25	45X449	PRS25V100	BR1005	TC2501	TD-100-25	TVA-1207	
C4	5	50NP		NP-PRS50V5	BBR8-150 †	TCN504		TVAS-1202.5*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together.
Connect positive terminals into circuit the same as the original non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10 NPO 10%		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C6	220		BPD-00022	DD-221	L10T22	CCD-221	B-322	5GA-T22
C7	220		BPD-00022	DD-221	L10T22	CCD-221	B-322	5GA-T22
C8	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C9	1000		BPD-001	DD-102	BYA10D1M	CCD-102	B-210	5HK-D1
C10	220		BPD-00022	DD-221	L10T22	CCD-221	B-322	5GA-T22
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C12	1000		BPD-001	DD-102	BYA10D1M	CCD-102	B-210	5HK-D1
C13	1		NPO-SI 1	TCZ-1			CNO-510	5TCCB-V1
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C15	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C16	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C17	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	5GA-T47
C18	220		BPD-00022	DD-221	L10T22	CCD-221	B-322	5GA-T22
C19	25 N2200	①				*		
C20	2-9 N750	(#17A273)						
C21	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C22	1000		BPD-001	DD-102	BYA10D1M	CCD-102	B-210	5HK-D1
C23	.0022 200V		P288N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C26	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C27	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	5GA-T47
C28	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C29	9 N3300					*		
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C32	.047 400V		P488N-047	DF-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C33	50000 100V		BPD-05	DF-503	CUB2S5	1DP-2-503	BT-150	5HK-S5
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C35	2 N750 ± .25mmf	(#47X628)						
C36	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C37	33 N750 10%		N750-SI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C39	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C40	100 N150					*		

CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C41	680 10%		DI-680	MD-681	1R5T68	CCS-681	JL-368	MS-368
C42	180 10%		DI-180	MD-181	L10T18	CCS-181		MS-318
C43	.047 200V		P288N-047	DF-503	CUB2S47	4DP-3-473	GEM-4147	4TM-S47
C44	.0025 200V		P288N-0025	D6-252	CUB6D25	6DP-1-252	GEM-6225	6TM-D25
C45	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C46	.1 200V		P488N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C47	330		DI-330	MD-331	L10T33	CCD-331	JL-330	MS-333
C48	.0025 200V		P288N-0025	D6-252	CUB6D25	6DP-1-252	GEM-6225	6TM-D25
C49	1500		SI 1500	D6-152	BYA10D15	CCD-152	UC-5215	5HK-D15
C50	.0025 200V		P288N-0025	D6-252	CUB6D25	6DP-1-252	GEM-6225	6TM-D25
C51	1500		SI 1500	D6-152	BYA10D15	CCD-152	UC-5215	5HK-D15
C52	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C53	10 NPO 10%		NPO-DI 10	DTZ-10	C10QIC	CCTO-100	CNO-410	10TCU-QI
C54	1500		SI 1500	D6-152	BYA10D15	CCD-152	UC-5215	5HK-D15
C55	.047 200V		P288N-047	DF-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C56	1500		SI 1500	D6-152	BYA10D15	CCD-152	UC-5215	5HK-D15
C57	.047 400V		P488N-047	DF-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C58	43 N750 10%			TCN-43		CCTN-470		10TCU-Q43
C59	43 N750 10%			TCN-43		CCTN-470		10TCU-Q43
C60	82 10%		1469-000082	D6-820	22R5Q82	CCD-820	CNO-482	MS-482
C61	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C62	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C63	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C64	680 10%		DI-680	MD-681	1R5T68	CCS-681	JL-368	10TS-T68
C65	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Not used in some versions.
Firestone Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	36X406 ①	BT-7417	A47F3-1meg	Q18-137X	RU16T15 *	Level, Tap @ 100K
B	Shaft			Not Req.	FS-3	Not Req.	SL3500	
R2	2meg	½	36X405	BT-175		Q13-139XX	UDT-296	Contour, Taps @ 650K,
R3A	500K	½	40X451	B-60	A47-500K-Z	Q13-133	U48	Treble 1.5meg
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	1meg	½	40X450	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	400Ω	1(WW)	40X452	WN-401	A43-400	W11-202	R500L	Hum Balance
B	Shaft			Not Req.	FKS-1/4	WM Kit	Not Req.	

① Some versions may use Part #36X404. * Use SL-38 bushing.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	FIRESTONE PART No.	NOTES
R6	2.2meg			
R7	10K			
R8	1meg			
R9	47K			
R10	22K			
R11	220Ω			
R12	680Ω			
R13	1000Ω			
R14	33Ω			
R15	470K			
R16	470K			
R17	15K	1		
R18	220Ω			
R19	1meg			
R20	4700Ω			
R21	3.3meg			
R22	68K			
R23	100Ω			
R24	12K			
R25	33Ω			

ITEM No.	RATING OHMS	RATING WATT	FIRESTONE PART No.	NOTES
R26	39K			
R27	6800Ω			
R28	4700Ω			
R29	330Ω			
R30	68Ω			
R31	100K			
R32	2.2meg			
R33	100K			
R34	15K		B85153	
R35	15K		B85153	
R36	100K 5%			
R37	100K 5%			
R38	100K 5%			
R39	470K			
R40	1meg 5%			
R41	220K			
R42	100K			
R43	560Ω			
R44	180K			
R45	470K			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	FIRESTONE PART No.	NOTES
R46	33K			
R47	220K			
R48	470K			
R49	220K			
R50	100K			
R51	2.2meg			
R52	47K			
R53	3300Ω			
R54	1000Ω			
R55	2.7meg			
R56	2.7meg			
R57	1meg			
R58	330K			
R59	560Ω			
R60	180K			
R61	1meg			
R62	82K			
R63	100K			
R64	2200Ω			
R65	82K			
R66	100K			
R67	100Ω			
R68	100Ω			
R69	100Ω			
R70	56Ω	1	C84560	
R71	65Ω	5	43X309	
R72	100Ω			
R73	56Ω	1	C84560	
R74	6800Ω			
R75	68Ω			
R76	1000Ω	1		
R77	330Ω	1		
R78	4700Ω			
R79	10K	2		
R80	680Ω	4		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil	9A2448	19-1000	19-1000	BC-561	4602		
L2	RF Choke	35A8						3.3uh ①
L3	FM RF Plate Coil	9A2445						
L4	FM RF Grid Coil	9A2446						
L5	Fil. Choke	35A6	19-1001	19-1001	BC-562	4604		1.5uh ①
L6	FM Osc. Coil	9A2447						
L7	RF Choke	35A8						3.3uh ①
L8	Loopstick	9A2441						
L9	AM RF Coil	9A2439						
L10	AM Osc. Coil	9A2438						
L11	Fil. Choke	35A6	19-1001	19-1001	BC-562	4604		1.5uh ①
L12	1st FM IF Trans.	9A2440	16-3487	16-3487	FM-254	1463		
L13	1st AM IF Trans.	9A2443	16-6758	16-6758	BC-352	12-C1	RF-1	
L14	2nd FM IF Trans.	9A2440	16-3487	16-3487	FM-254	1463		
L15	2nd FM IF Trans.	9A2443	16-6758	16-6758	BC-353	12-C2	RF-2	
L16	3rd FM IF Trans.	9A2440	16-3487	16-3487	FM-254	1463		
L17	Fil. Choke	35A6	19-1001	19-1001	BC-562	4604		1.5uh ①
L18	Discriminator	9A2442	17-3494	17-3494	FM-253	1464		

① IRC Part #CLA.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA: FIRESTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.66A	620VCT @ .190A Tap @ 280VCT @ .038A	5V @ 3A	53X371						
	SEC. 3	SEC. 4	SEC. 5							
	5V @ 2A	12V @ 1.8A	6.3V @ 3.1A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: FIRESTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	3000Ω CT	3-4Ω	51X194	22S72 *				22S72 *	S-33A *	* Drill new mounting holes.

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: FIRESTONE PART No.	QUAM PART No.	NOTES
SP1	12"	PM	6-8Ω	12A561	12A6A	
SP2	12"	PM	6-8Ω	12A562	12A6A	
SP3	5"	PM	3-4Ω	12A563	5A1	
SP4	5"	PM	3-4Ω	12A563	5A1	

PHONO CARTRIDGE

ITEM No.	FIRESTONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M1		13TX	Not Req.	13	Not Req.	A-44XSD	Not Req.	10T2-S	Not Req.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	FIRESTONE PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M2		* W204DS †♦ or * W204DD-1 ♦	* A-44X † or * A-44XSD †♦ or * A-44XDD ♦	† Jewel ♦ Diamond * Includes Cartridge

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	Tuning Cap.	14A235	6 Gang (AM Sections: Ant. 13-332mmf, RF 12-217mmf, Osc. 10-143mmf)
M4	Switch	2A493	Function
M5	Switch	2A492	Speaker Off-On

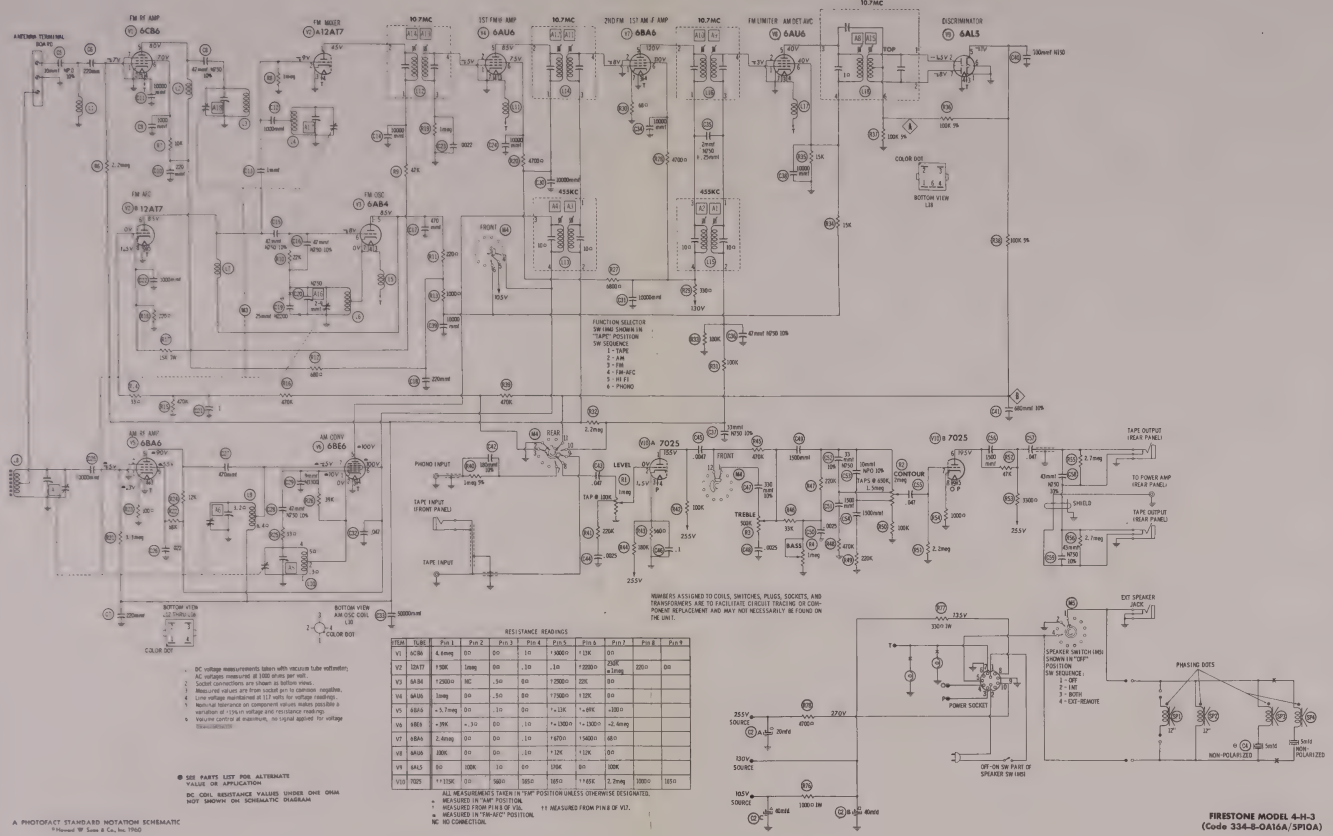
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	10A947	Tuning, Off-On Speaker Switch
Knob	10A948	Bass, Treble, Contour, Level, & Function
Dial Glass	58X808	
Dial Plate	25X2167-1	
Dial Pointer	15X286-1	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	4.6meg	0Ω	0Ω	10	*100Ω	*13K	0Ω		
V2	12AT7	*50K	1meg	0Ω	10	10	*220Ω	250Ω ≡1meg	220Ω	0Ω
V3	6AB4	*250Ω	NC	50	0Ω	*250Ω	22K	0Ω		
V4	6AU6	1meg	0Ω	50	0Ω	*750Ω	12K	0Ω		
V5	6BA6	▲5.7meg	0Ω	10	0Ω	*▲11K	*▲69K	▲100Ω		
V6	6BE6	▲39K	▲30	0Ω	10	*▲100Ω	*▲100Ω	▲2.4meg		
V7	6BA6	2.4meg	0Ω	0Ω	10	*670Ω	*540Ω	68Ω		
V8	6AU6	100K	0Ω	0Ω	10	*12K	*12K	0Ω		
V9	6AL5	80	100K	10	0Ω	1M⊕	0Ω	100K		
V10	7025	††135K	0Ω	560Ω	1650	1650	††65K	2.2meg	1000Ω	1650

ALL MEASUREMENTS TAKEN IN "TAPE" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED FROM PIN 8 OF V6.
▲ MEASURED IN "FM-AFC" POSITION.
NC NO CONNECTION.
†† MEASURED FROM PIN 8 OF V12.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom view.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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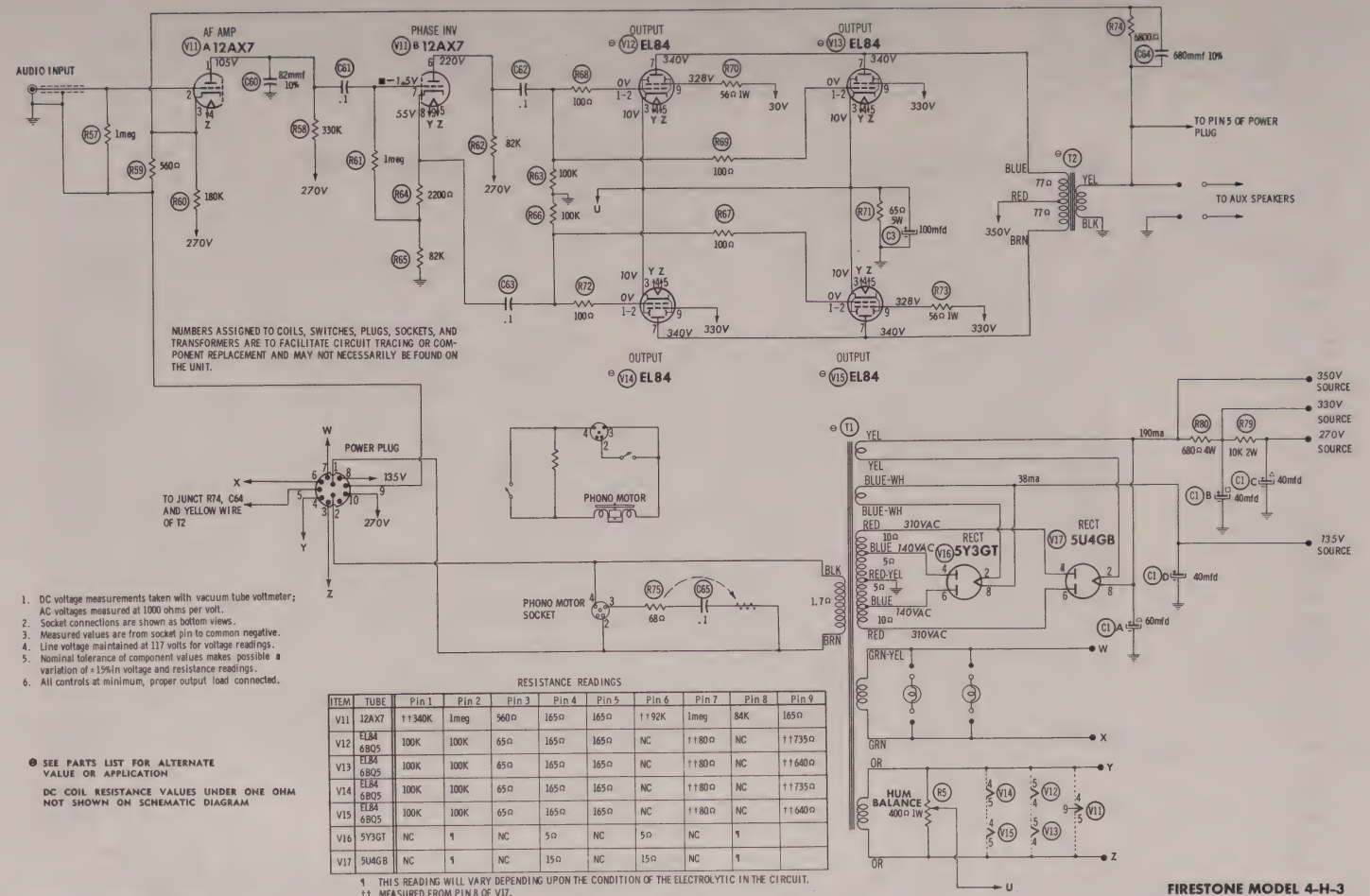
FIRESTONE MODEL 4-H-3
(Code 334-8-0A16A/SP10A)

TUNER SCHEMATIC

SET 487 FOLDER 5

PAGE 7 PAGE 8


AUDIO INPUT
AF AMP V11A 12AX7
PHASE INV V11B 12AX7
OUTPUT V12 EL84
OUTPUT V13 EL84
OUTPUT V14 EL84
OUTPUT V15 EL84
TO PIN 5 OF POWER PLUG
TO AUX SPEAKERS
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
POWER PLUG
TO JUNCT R74, C64 AND YELLOW WIRE OF T2
PHONO MOTOR
PHONO MOTOR SOCKET
RECT V16 5Y3GT
RECT V17 5U4GB
350V SOURCE
330V SOURCE
270V SOURCE
135V SOURCE
HUM BALANCE 400Ω 1W

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V11	12AX7	††340K	1meg	560Ω	165Ω	165Ω	††92K	1meg	84K	165Ω
V12	EL84 6BQ5	100K	100K	65Ω	165Ω	165Ω	NC	††80Ω	NC	††735Ω
V13	EL84 6BQ5	100K	100K	65Ω	165Ω	165Ω	NC	††80Ω	NC	††640Ω
V14	EL84 6BQ5	100K	100K	65Ω	165Ω	165Ω	NC	††80Ω	NC	††735Ω
V15	EL84 6BQ5	100K	100K	65Ω	165Ω	165Ω	NC	††80Ω	NC	††640Ω
V16	5Y3GT	NC	¶	NC	5Ω	NC	5Ω	NC	¶	
V17	5U4GB	NC	¶	NC	15Ω	NC	15Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 8 OF V17.
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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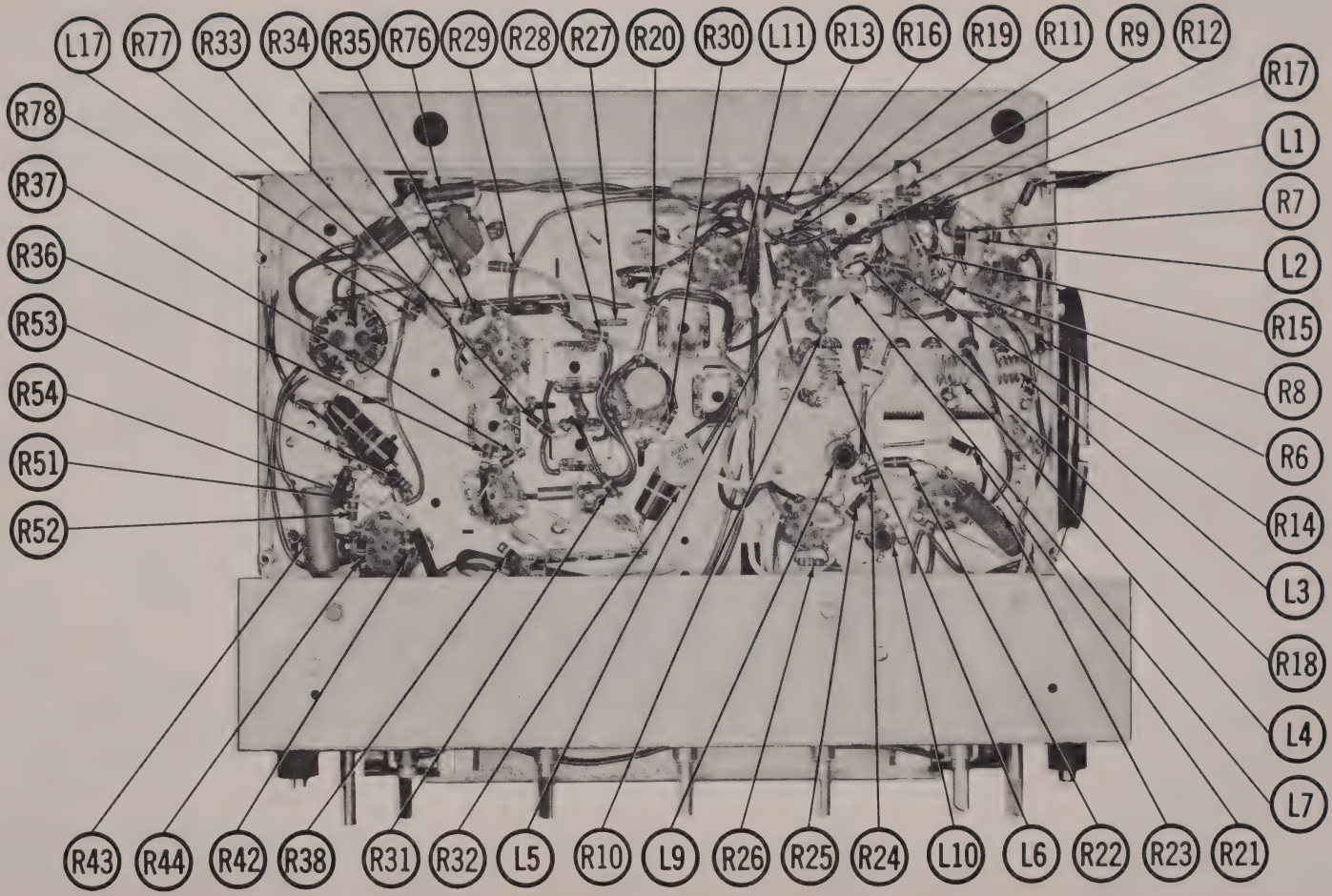
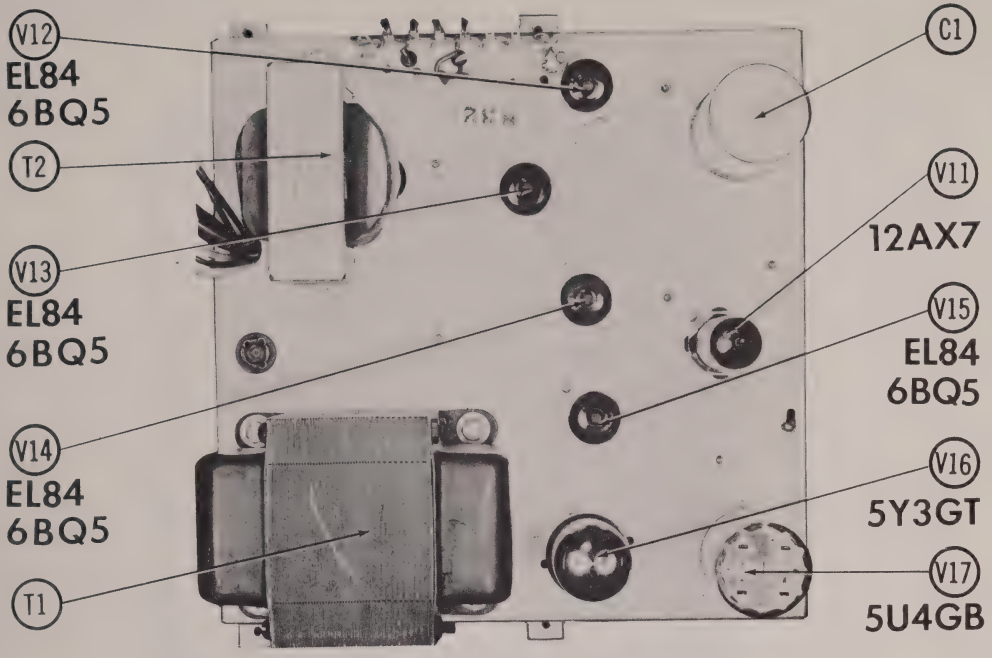
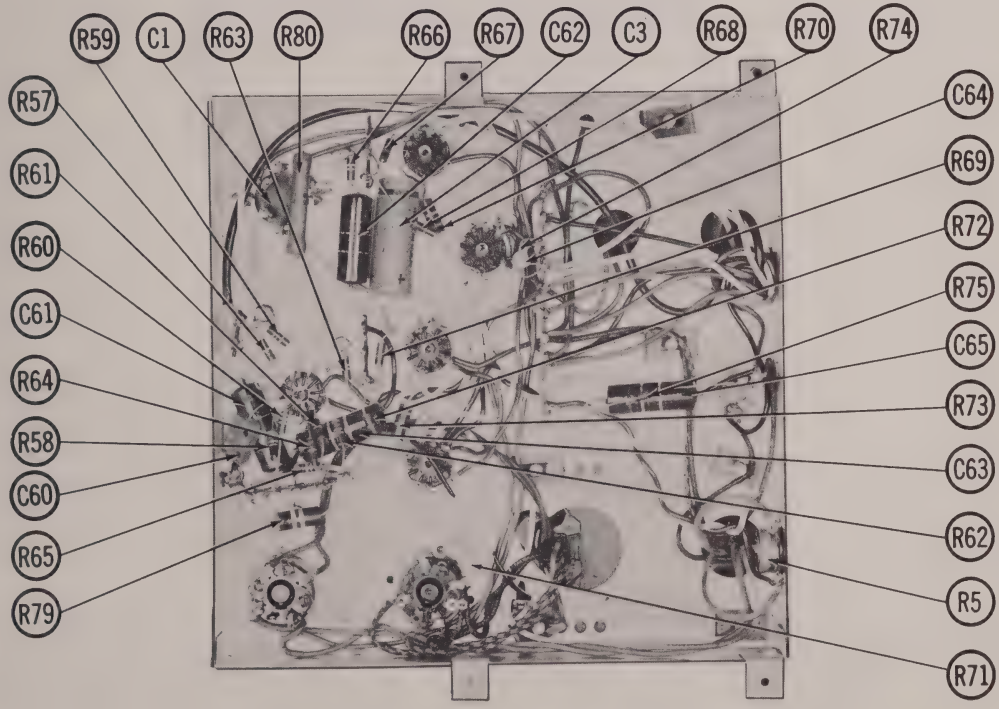
FIRESTONE MODEL 4-H-3 (Code 334-8-0A16A/5P10A)



TUNER CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



AMP CHASSIS - TOP VIEW



AMP CHASSIS - BOTTOM VIEW

PHOTOFACT® Folder

KAISER
MODEL KRM

KAISER
MODEL KRM

KAISER
MODEL KRM

TRADE NAME	Kaiser Model KRM
IMPORTER	Delmonico International Corp., 42-24 Orchard Street, Long Island City 1, N. Y.
TYPE SET	AC Operated 2 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 26 Watts, .26 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JX612

DATE 6 – 60 SET 487 FOLDER 6

SET 487 FOLDER 6

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	AF Amplifier	EBC91 (6AV6) *	V2	Output	EL84 (6BQ5) *

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	KAISER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	350	)	PRS450V4040	BBR5035)			TVL-2767	
B	50	350			BBR5035				
C2	50	12		SRE12V50	NLW50-12	TT15X50	ML50-15	TE-1133	
C3	5	70		SRE150V5	NLW5-100	TT150X5	TD-5-50	TE-1404	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.025 500V		P688N-025		PJ6S25	6DP-3-253	GEM-6125	5BF-S27
C5	100 10%		NPO-SI 100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C6	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C7	.025 500V		P688N-025		PJ6S25	6DP-3-253	GEM-6125	5BF-S27
C8	.0047 500V	Note 1	P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C9	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C10	.025 500V		P688N-025		PJ6S25	6DP-3-253	GEM-6125	5BF-S27
C11	.0001 500V			TCZ-160	5W5T16	CM-20B-161J		MS-316
C12	25 5%		NPO-SI 25	TCZ-25	C10Q25C	CM-20B-240J	CNO-425	10TCC-Q25
C13	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C14	.005 500V		P688N-005	DD-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KAISER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1.3meg 300K Tap	1/2		BT-73	A47F4-1meg	Q13-137X	UT-438	Volume
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
C	Switch			KR-2	SWE-20	76-2	US-27	Power Off-On
R2	5meg							Bass
R3	500K							Treble

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

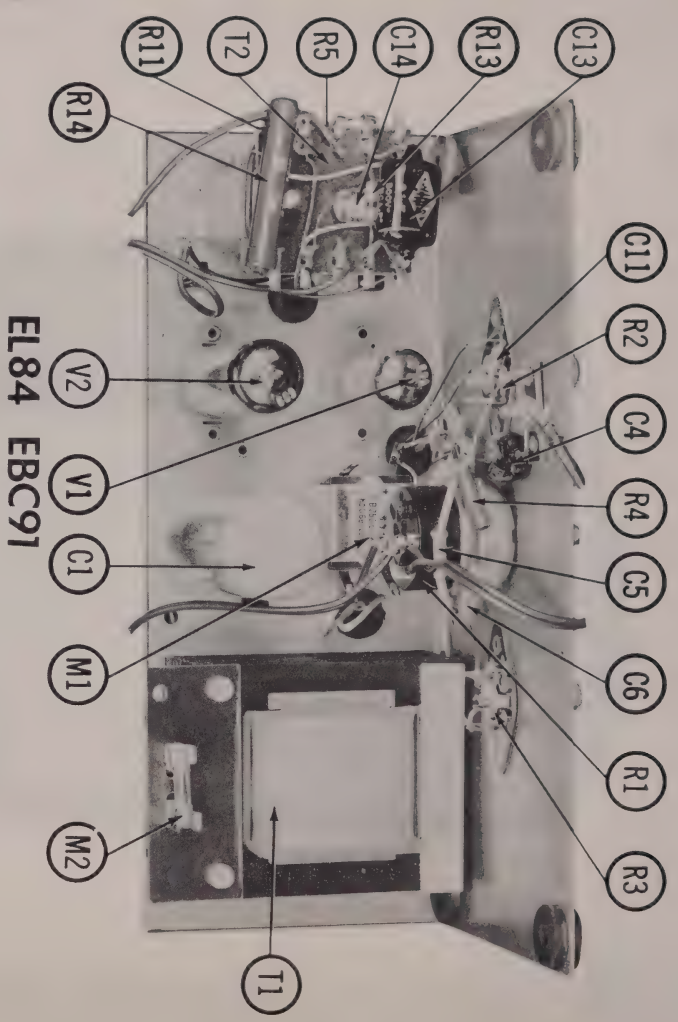
ITEM No.	RATING	REMARKS
R4	50K	
R5	300Ω	
R6	10meg	
R7	300K	

ITEM No.	RATING	REMARKS
R8	100K	
R9	100K 5%	
R10	820K	(800K) *
R11	5000Ω	

ITEM No.	RATING	REMARKS
R12	200Ω 5% 1W	
R13	20K	
R14	1000Ω 2W	

* Alternate Value.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	KAISER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V Ⓐ .26A	220 V Ⓐ .040A	6.3V Ⓐ 1.4A	TR-54						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	KAISER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6100Ω	3-4Ω	TR29B							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	KAISER PART No.	QUAM PART No.	
SP1	7"x 10"	PM	3-4Ω			
SP2	4"	PM	3-4Ω			

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	KAISER PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.040A	B250C75 *					* Bridge Type Selenium

FUSES

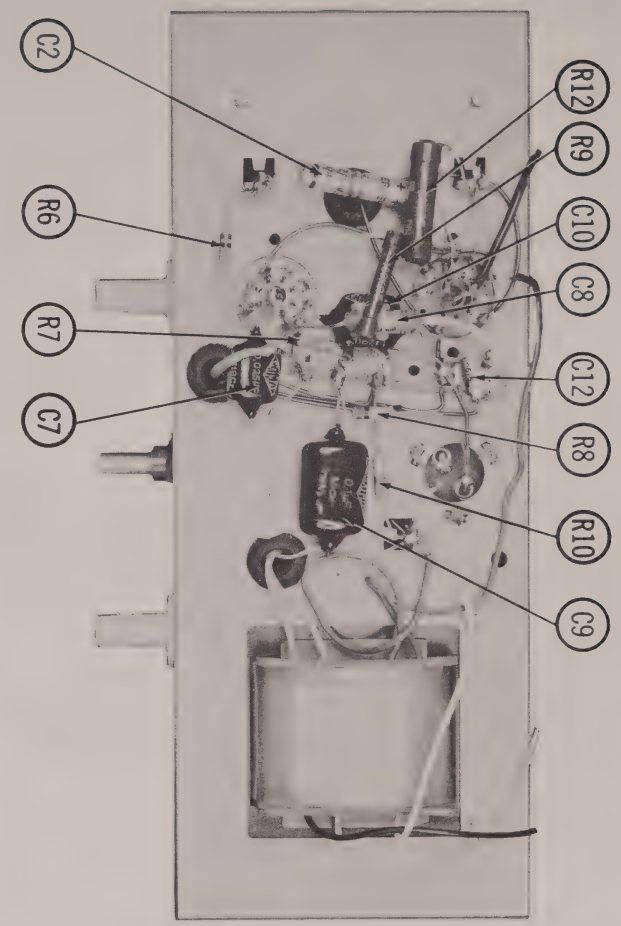
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			KAISER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2		8/10A 250V					GMA 8/10	

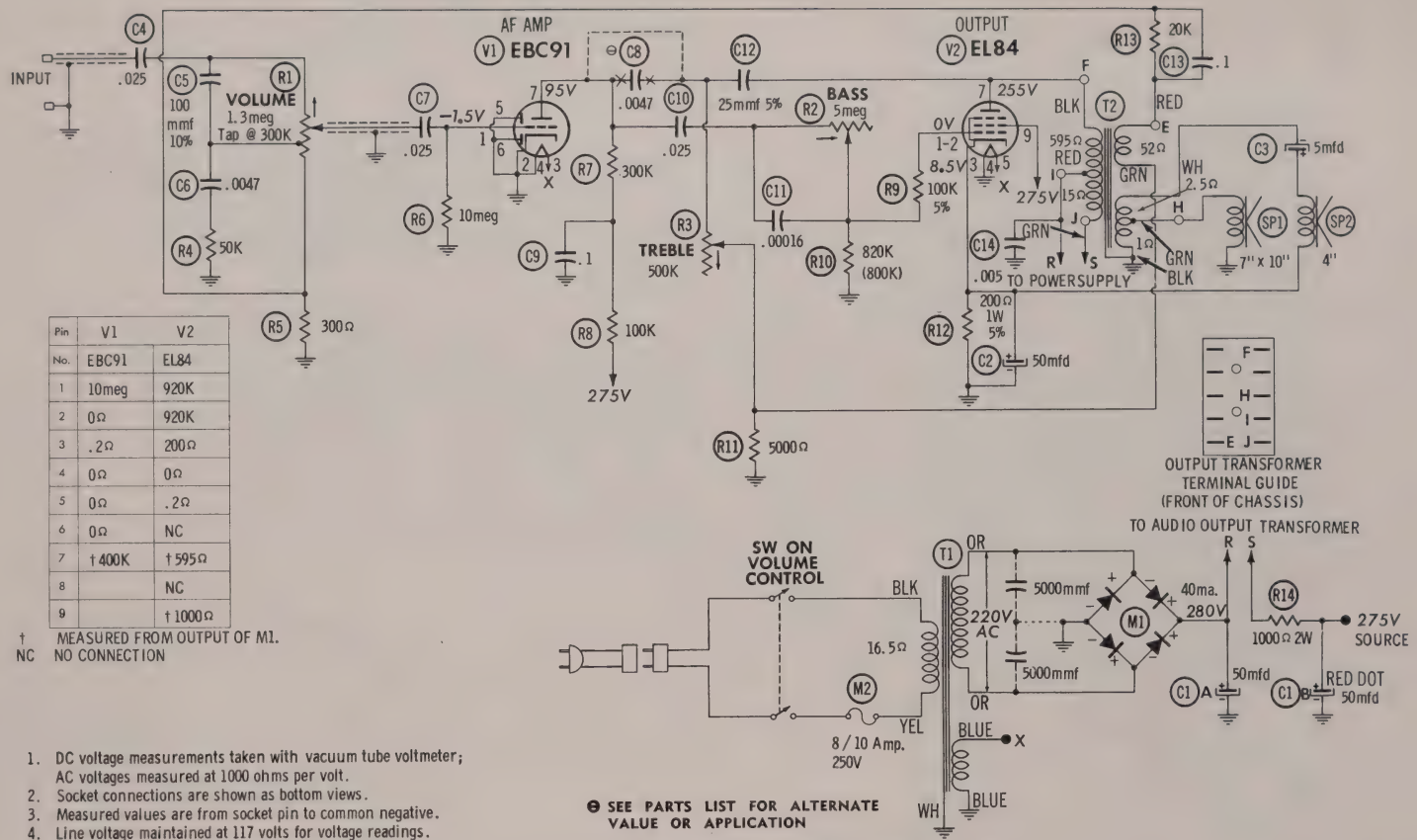
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





Pin No.	V1 EBC91	V2 EL84
1	10meg	920K
2	0Ω	920K
3	.2Ω	200Ω
4	0Ω	0Ω
5	0Ω	.2Ω
6	0Ω	NC
7	†400K	†595Ω
8		NC
9		†1000Ω

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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KAISER
MODEL KRM

PHOTOFACT® Folder

**MASCO MODEL
SA-202**

MASCO MODEL
SA-202

MASCO MODEL
SA-202

TRADE NAME	Masco Model SA-202
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th Street, Long Island City 3, N. Y.
TYPE SET	AC-DC Operated 3 Tube Stereo Amplifier
POWER SUPPLY	110 - 120 Volts AC-DC RATING 30 Watts, .31 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JV640

SET 487 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 1 Output	35DZ8	V2	Channel 2 AF Amp. - Channel 2 Output	35DZ8
			V3	Rectifier	50DC4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MASCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	40	150		PR4-200	BBRT44215	TCT3116	TDLT-4	TVA-2445	
B	40	150			BBR10-50	TC32	TD-10-50	TVA-2425	
C	20	150							
D	10	50							

FIXED CAPACITORS

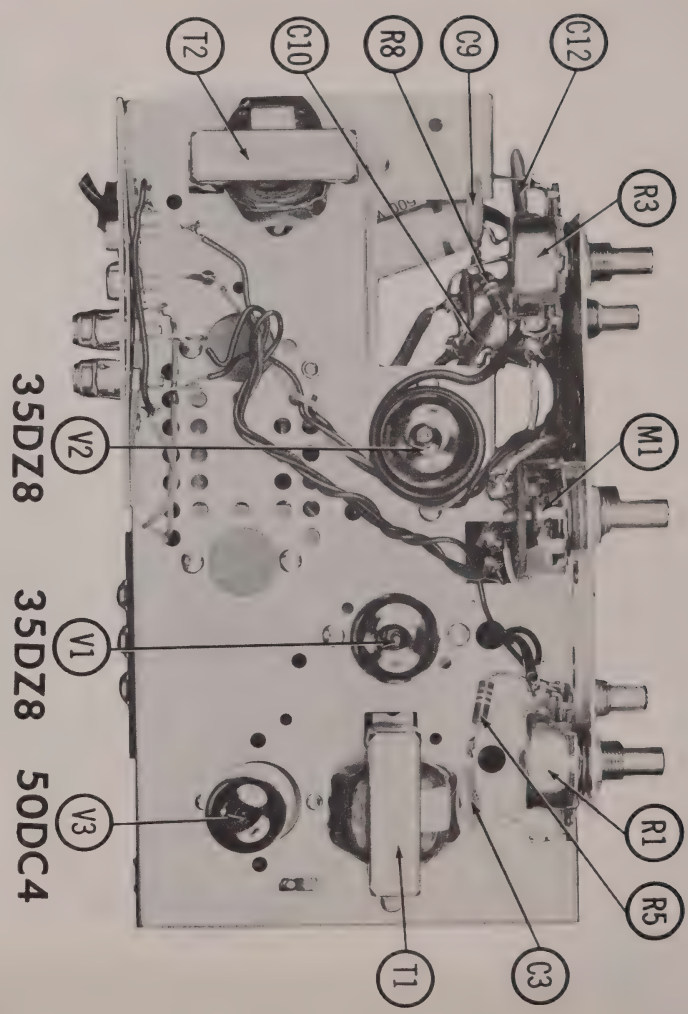
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C3	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C6	3000 10%		DI-3000		PM6D3	CCD-302	GEM-623	10TS-D3
C7	3000 10%		DI-3000		PM6D3	CCD-302	GEM-623	10TS-D3
C8	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C9	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C12	3000 10%		DI-3000		PM6D3	CCD-302	GEM-623	10TS-D30
C13	3000 10%		DI-3000		PM6D3	CCD-302	GEM-623	10TS-D30
C14	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	2812	BT-66	A47F3-500K	Q13-133X	UT-427	Volume, Channel 1
	100K Tap							
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R2A	500K	½	BA811-743	B-60	A47-500K-Z	Q13-133	U48	Tone, Channel 1
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R3A	500K	½	2812	BT-66	A47F3-500K	Q13-133X	UT-427	Volume, Channel 2
	100K Tap							
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R4A	500K	½	2491	B-60-S	A47-500K-Z	Q13-133	U48	Tone, Channel 2
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	27K	
R6	2.7meg	
R7	270K	
R8	27K	

ITEM No.	RATING	REMARKS
R9	2.7meg	
R10	270K	
R11	68Ω	
R12	2200Ω	(2700Ω) *

ITEM No.	RATING	REMARKS
R13	150Ω	
R14	100K	
R15	18Ω	

* Alternate Value.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MASCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	37A2	24S53	A-3025	AU-605	A-3332	24S53	S-12X	
T2	2400Ω	3-4Ω	37A2	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

MISCELLANEOUS

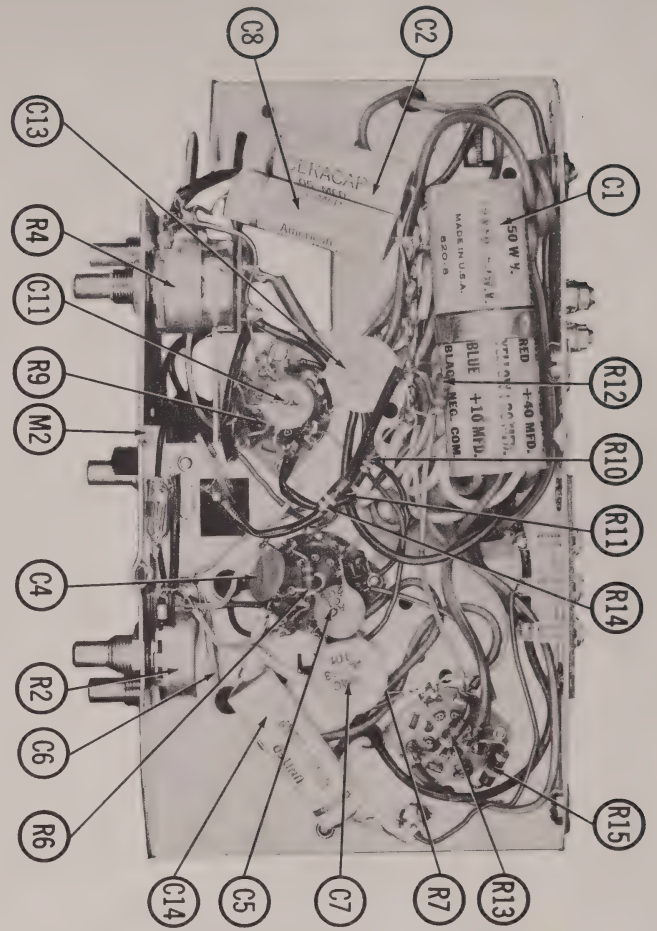
ITEM No.	PART NAME	MASCO PART No.	NOTES
M1	Switch		Function (Rotary Wafer Type)
M2	Switch		Monaural-Stereo (SPDT Slide Type)

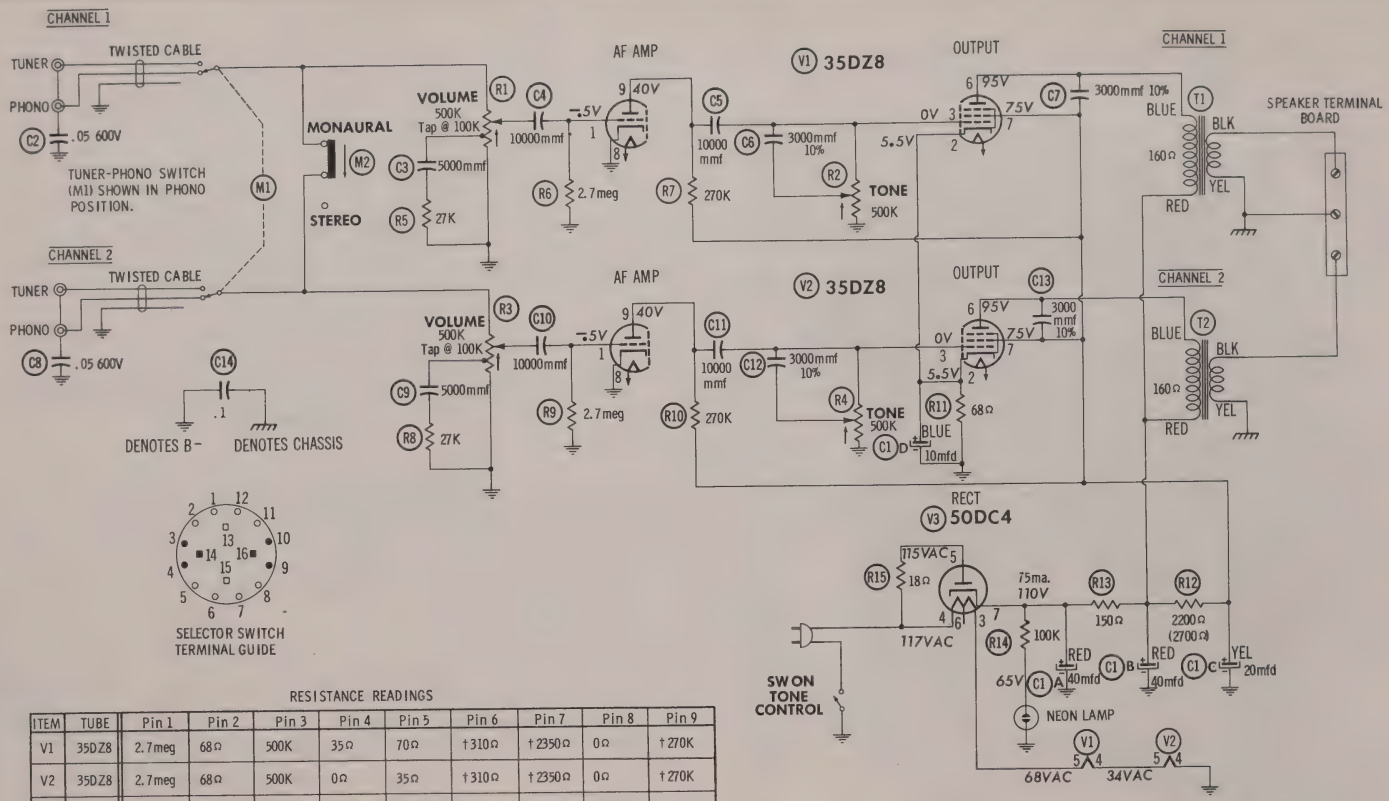
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	35DZ8	2.7meg	68Ω	500K	35Ω	70Ω	†310Ω	†2350Ω	0Ω	†270K
V2	35DZ8	2.7meg	68Ω	500K	0Ω	35Ω	†310Ω	†2350Ω	0Ω	†270K
V3	50DC4	TP	TP	70Ω	120Ω	140Ω	110Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V3.
NC NO CONNECTION TP TIE POINT

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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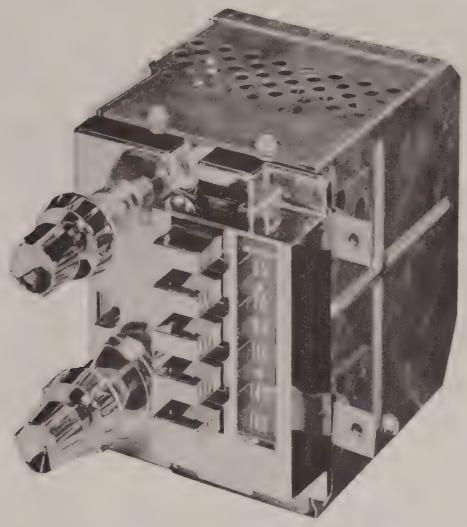
MASCO MODEL SA-202

PHOTOFACT® Folder with CIRCUITRACE®

**MERCURY MODEL
94PM (B9MF18805-B)**

MERCURY MODEL
94PM (B9MF18805-B)



TRADE NAME	Mercury Model 94PM (B9MF18805-B) For 1959 Mercury Automobiles
MANUFACTURER	Philco Corp., Tioga & "C" Streets, Philadelphia, Pa.
TYPE SET	Battery Operated 4 Tube-1 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1.5 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	535 — 1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1 thru A4.....GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A6.....GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to pin 7 (grid) of Converter. Low side to chassis.	262.5KC (400~ mod.)	High end stop.	DC probe to point (A). Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	A4	Adjust for MINIMUM deflection. Repeat Steps 1 & 2.
3.	Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	A5, A6	Adjust for maximum deflection.
4.	"	1000KC	1000KC	"	A7	"
5.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

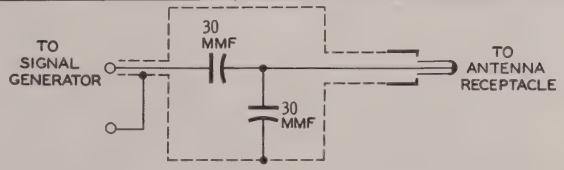


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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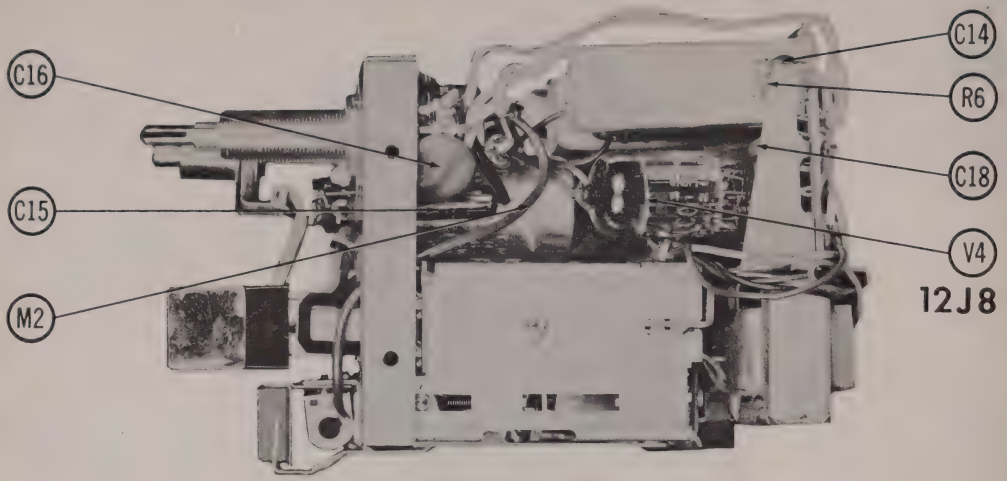
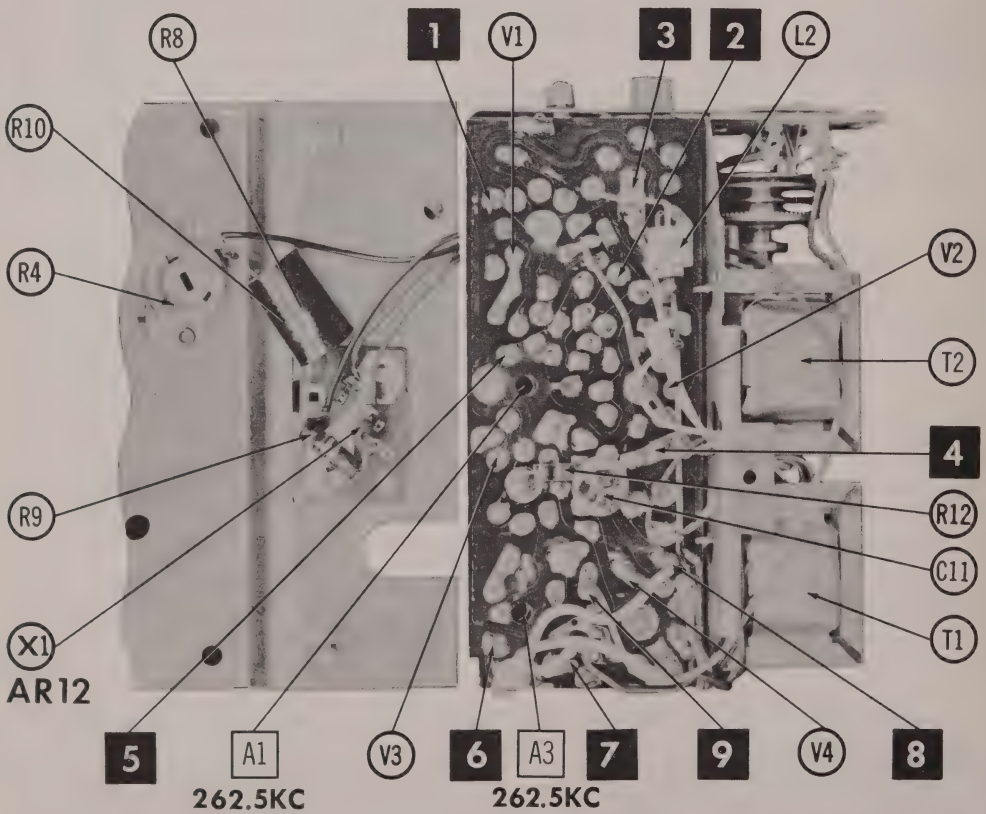
SET 487 FOLDER 8



CHASSIS - SIDE VIEW



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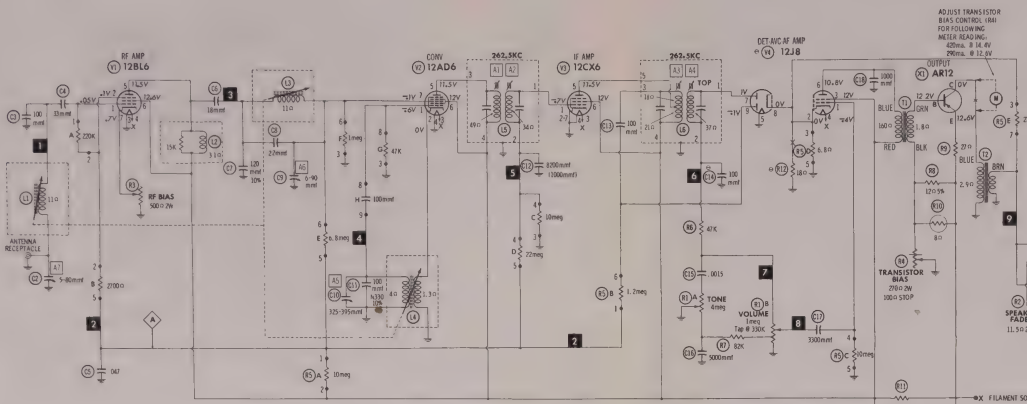
CHASSIS BOTTOM VIEW

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	4meg	3.8meg	0.0	2.8Ω	150Ω	†22Ω	470Ω		
V2	12AD6	47K	1.3Ω	2.8Ω	0.0	†10Ω	†22Ω	1meg		
V3	12CX6	1meg	0.0	2.8Ω	0.0	145Ω	†22Ω	0.0		
V4	12J8	10meg	6.8Ω	†22Ω	2.8Ω	0.0	†180Ω	1meg	6.8Ω	5meg

† MEASURED FROM JUNCTION OF R11 AND C1A.

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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MERCURY MODEL 94PM (B9MF18805-B)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS • GENERAL ELECTRIC)	ITEM No.	USE	TYPE (RAYTHEON • SYLVANIA)
V1	RF Amplifier	12BL6	V3	IF Amplifier	12CX6
V2	Converter	12AD6	V4	Det.-AVC-AF Amp.	12J8 (12DU7) *

* Alternate

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA: CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
X1	AR12	Output	LT-52				PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■800	16	61-0086-11	AFH2-02-55				TVLS-2179.5*	
B	▲200	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	5-80	#31-6533-1				462		
C3	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C4	33		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C5	.047 200V		P288N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	2TM-S47
C6	18		DI-18	DD-180	L10Q18	CCD-180	GP418	10TS-Q18
C7	120 10%		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C8	22		DI-22	DD-220	L10Q22	CCD-220	GP422	10TS-Q22
C9	6-90	#31-6502-10						
C10	325-395	#31-6532-6						
C11	100 N330 10%			TCA-100		*		10TCS-T10
C12	8200	(10000) †	DAC-26	DD-822	HVE16D8	CCD-822	UAC-280	BL-D80
C13	100		DI-100	DD-101	L10T1	CM-19B-101M	MCB235	MS-31
C14	100	Note 1	1468-0001	DD-101	22R5T1	CCD-101	GP310	10TS-T10
C15	.0015 400V		P488N-0015	D6-152	CUB6D15	6DP-1-152	GEM-6215	6TM-D15

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C16	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D5
C17	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33
C18	1000		BPD-001	DD-103	BYA10D1	CCD-102	GP210	5HK-D10

\# Philco Part Number.
† Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Some versions may use a component combination in this application (Part #30-6036-2).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	4meg		33-5580-24	F1-83 †				Tone
B	1meg			R2-59			■ UE4081-S	Volume
C	330K Tap Switch			KR-7				Power Off-On
R2	11.5Ω	2(WW)	33-5576-8					Speaker Fader
R3	500Ω	2(WW)	33-5591-12		39-500	112-500	FL-500	RF Bias Note 1
R4	270Ω	2(WW)	33-5591-11		39-200 *	112-200 *	FL-200 *	Transistor Bias
	100Ω Stop							

* Use 100Ω in series with terminal.
† Use AK-28 bushing.
■ "STA-LOC" equivalent: FK56L, RU16T334, OS1625, IS2125, US-42.
Note 1. Some versions may use a 750Ω control.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5A	10meg	#30-6527-2
B	1.2meg	
C	10meg	
D	6.8Ω	
E	270Ω	

ITEM No.	RATING	REMARKS
R6	47K	
R7	82K	
R8	12Ω 5%	
R9	27Ω	
R10	Temp. Comp.	#33-1343-14

ITEM No.	RATING	REMARKS
R11	22Ω	
R12	18Ω	Note 1.

\# Philco Part Number
Note 1. Not used in some versions.

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PHILCO PART No.	REPLACEMENT DATA
K1	RF Amp. - Converter Network	100mmf, 2700Ω, 47K, 220K, 1meg, 6.8meg, 10meg, 22meg	30-6528-1	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		PHILCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Tuning Coil	32-4730-31						
L2	RF Choke	32-4480-37	19-1037 *	19-1037 *	BC-513 *	4652 *		1MH①
L3	RF Tuning Coil	32-4730-32						
L4	Osc. Tuning Coil	32-4730-33						
L5	Input IF	32-4770-1	16-6756	16-6756	BC-344	13-PH1		
L6	Output IF	32-4771-1						
L7	"A" Lead Choke	32-4720-4						265UH

* Parallel With 15K Resistor.
① Wound On 15K Resistor.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	10	1	32-8865-1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	30Ω	3-4Ω	32-8864-1							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	FDT-18808-A	69A2	

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	Spark Plate	38-1254-1	(300mmf) "A" Lead
M2	Spark Plate	38-1254-1	(300mmf) Pilot Light Lead
	Printed Panel	54-6839	

CABINETS & CABINET PARTS

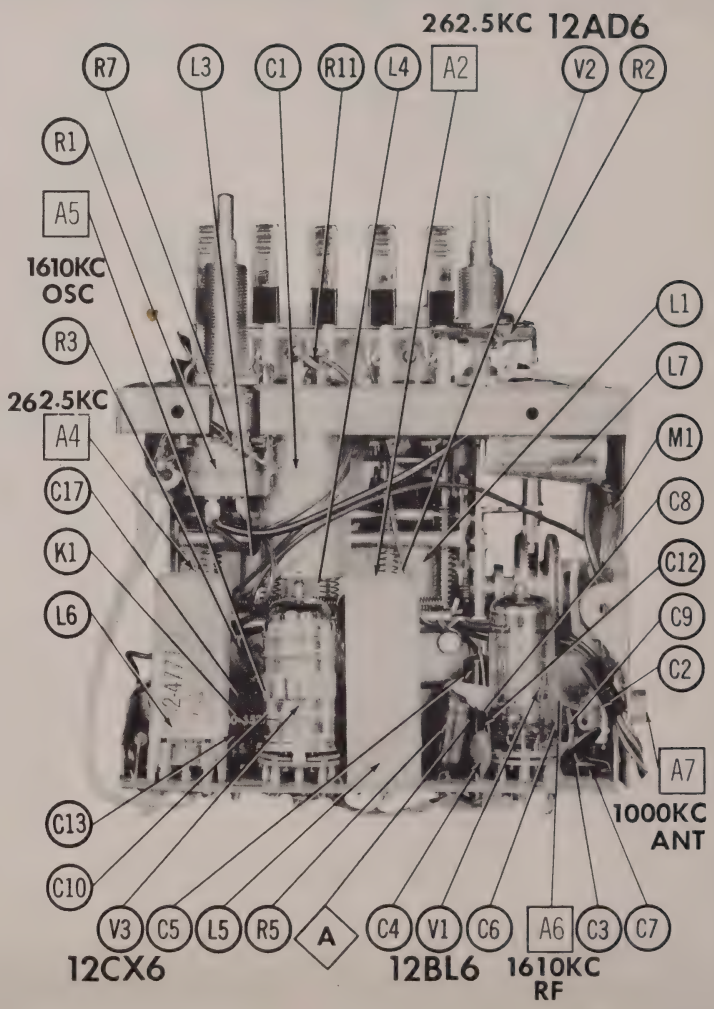
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Pushbutton Ass'y	76-10783-1	
Pointer Arm Ass'y	76-11513-8	
Dial Scale	54-6774	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

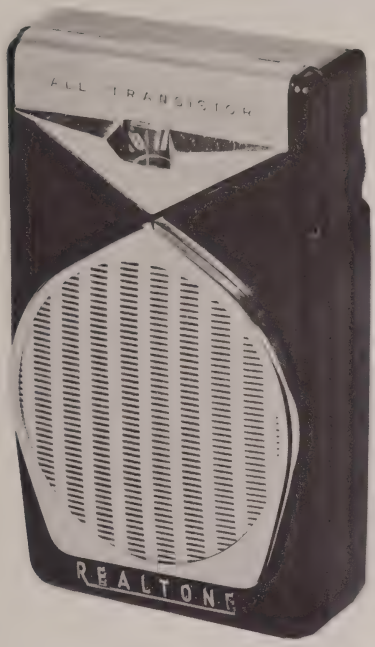
CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

REALTONE MODEL TR-801 (Electra)

REALTONE MODEL
TR-801 (Electra)



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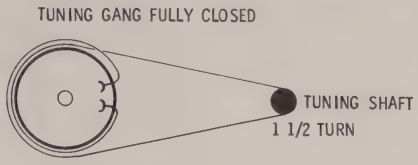

FRONT VIEW

REALTONE MODEL
TR-801 (Electra)

TRADE NAME	Realtone Model TR-801 (Electra)
IMPORTER	Realtone Electronics, 184 Fifth Ave., New York 10, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	535-1605KC
RATING	4MA @ 9 Volts DC (No Signal, Min. Volume) 5MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3 .... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2526
A5..... GENERAL CEMENT #5000, 5003, 5066, 8271, 8272, 8276, 8277, 8290, 8609, 8722, 9150, 9298
WALSCO #2515, 2516, 2518, 2519, 2525, 2541

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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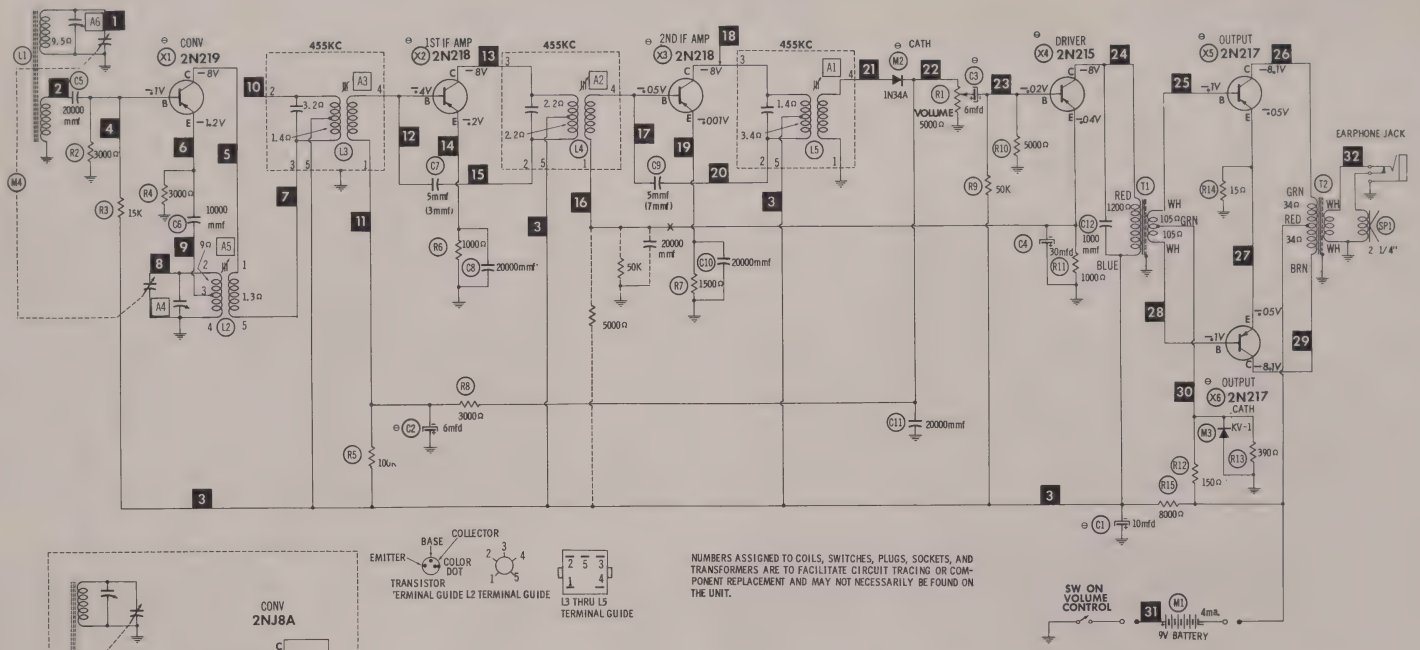
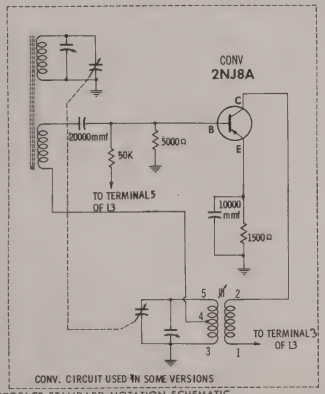
JF672

SET 487 FOLDER 9





CONV. CIRCUIT USED IN SOME VERSIONS

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL RESISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

REALTONE MODEL TR-801 (Electra)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N219 *	Converter		2N219	2N486		PNP
X2	2N218 ♦	1st IF Amplifier		2N218	2N483	2N218	PNP
X3	2N218 †	2nd IF Amplifier		2N218	2N483	2N218	PNP
X4	2N215 ‡	Driver		2N215	2N362		PNP
X5	2N217 ▲	Output		2N217	2N631	2N217	PNP } Matched Pair
X6	2N217 ▲	Output		2N217	2N631	2N217	PNP }

* Type 2S30, 2NJ8A, HJ60 may be used in some versions.
♦ Type 2S31, 2NJ5A, 2N410 may be used in some versions.
† Type 2S31, 2NJ5A, HJ62 may be used in some versions.
‡ Type 2S32, 2NJ9A, HJ62 may be used in some versions.
▲ Type 2S33, 2NJ9A, 2N408 may be used in some versions.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	REALTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	12		XPP-12010	NLW10-15	TT12X10	ML10-15	TE-1128	Note 1
C2	6	6							Note 2
C3	6	6							Note 3
C4	30	6			EC5-6				

Note 1. Some versions may use 50mfd in this application.
Note 2. Some versions may use 30mfd in this application.
Note 3. Some versions may use 10mfd in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20	
C6	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10	
C7	5	(3mmf) *	NPO-DI 5	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50	
C8	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20	
C9	5	(7mmf) *	NPO-DI 5	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50	
C10	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20	
C11	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20	
C12	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10	

* Alternate Value.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REALTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4		B16-214				Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	3000Ω	
R3	15K	
R4	3000Ω	
R5	100K	
R6	1000Ω	

ITEM No.	RATING	REMARKS
R7	1500Ω	
R8	3000Ω	
R9	50K	
R10	5000Ω	
R11	1000Ω	

ITEM No.	RATING	REMARKS
R12	150Ω	
R13	390Ω	
R14	15Ω	
R15	8000Ω	

PRINTED BOARD

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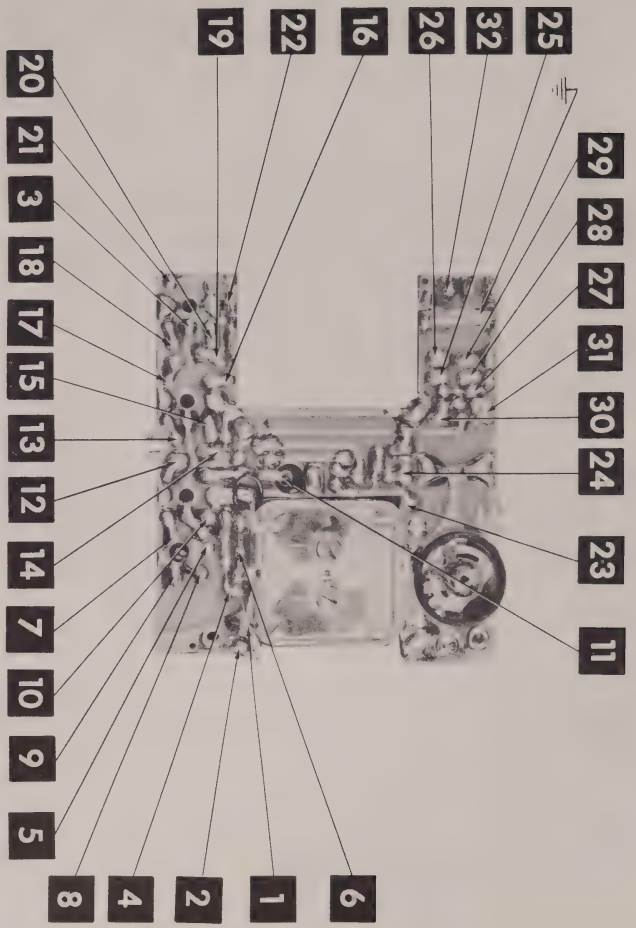


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		REALTONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick							
L2	Osc. Coil							
L3	1st IF Trans.							
L4	2nd IF Trans.							
L5	3rd IF Trans.							

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	REALTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3	1	M-1218	TR-42			TR-42		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	REALTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	720Ω	8Ω	M-1219							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	REALTONE PART No.	QUAM PART No.	
SP1	2 1/4"	PM	8-10Ω	PD-22ZRS	22A06Z8	

BATTERIES

ITEM No.	VOLTAGE	REALTONE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		REALTONE PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A	*	1N34A	1N34A	1N34A	Detector (Pigtail)
M3	KV-1					Bias (Pigtail)

* Some versions may use type #1NA4G or 1N46 in this application.

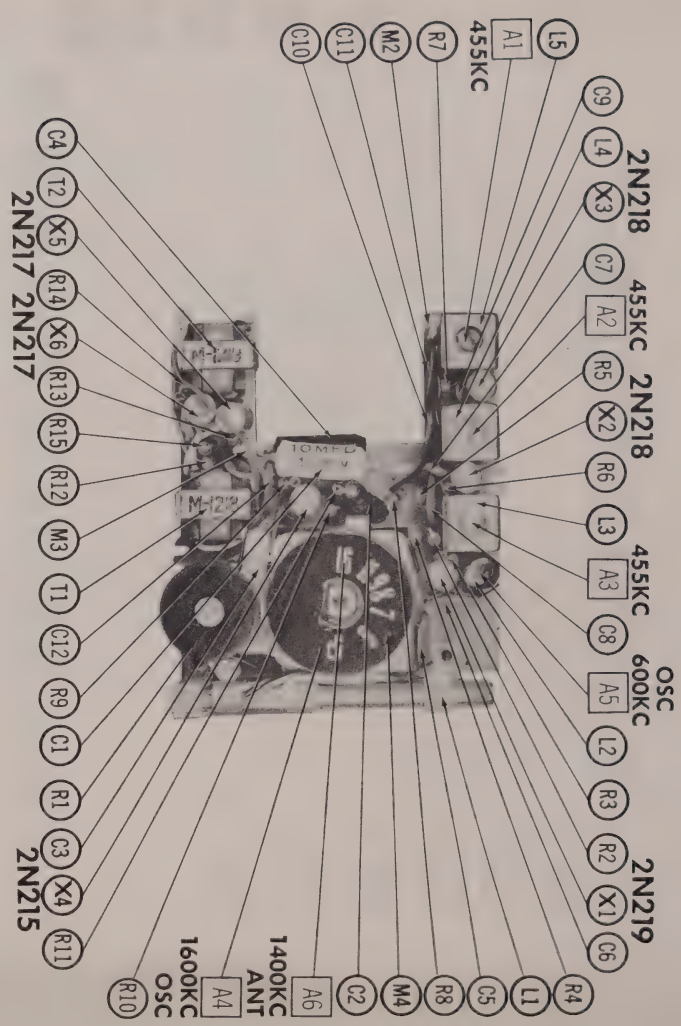
MISCELLANEOUS

ITEM No.	PART NAME	REALTONE PART No.	NOTES
M4	Tuning Cap.		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

REGENCY
MODEL TR-99

TRADE NAME	Regency Model TR-99
MANUFACTURER	Regency Div., I. D. E. A., 7900 Pendleton Pike, Indianapolis 26, Indiana
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	4.5 Volts DC
RATING	10MA @ 4.5 Volts DC (No Signal, Min. Volume) 40MA @ 4.5 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	535 — 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1, A2, A3..... GENERAL CEMENT #9440
A4, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A5..... GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A4	"
3.	"	600KC	Tune to 600KC signal.	"	A5	"
4.	"	1400KC	Tune to 1400KC	"	A6	Adjust for maximum output while rocking tuning gang.

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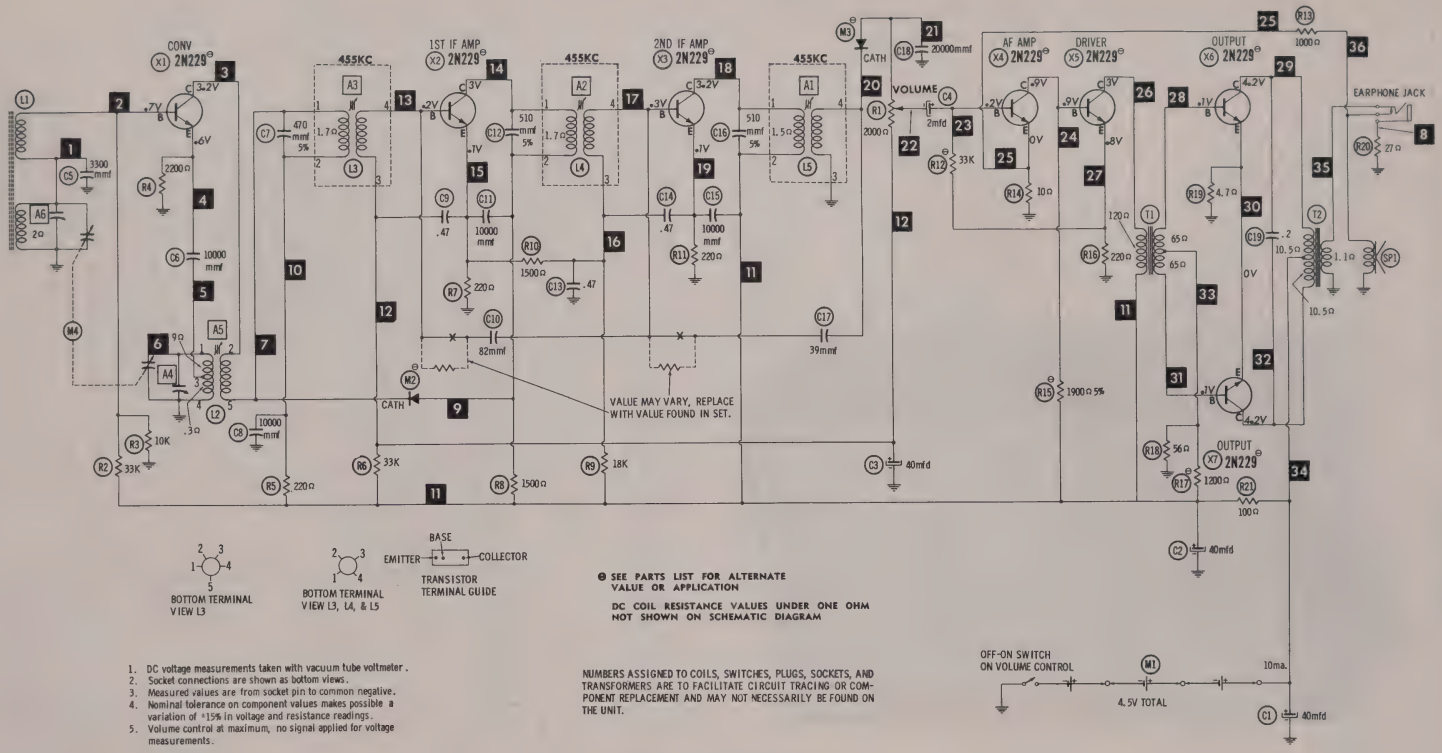
REGENCY
MODEL TR-99
REGENCY
MODEL TR-99
SET 487 FOLDER 10



❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

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REGENCY MODEL TR-99

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N229 *	Converter					PNP
X2	2N229 *	1st IF Amplifier					PNP
X3	2N229 *	2nd IF Amplifier					PNP
X4	2N229 *	AF Amplifier					PNP
X5	2N229 *	Driver					PNP
X6	2N229 *	Output					PNP \ Matched
X7	2N229 *	Output					PNP / Pair

* Selected Transistors.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	REGENCY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	40	10	300-473-10	PWE10040	EC50-10	TT15X40	ML40-15	TE-1119	
C2	40	10	300-473-10	PWE10040	EC50-10	TT15X40	ML40-15	TE-1119	
C3	40	10	300-473-10	PWE10040	EC50-10	TT15X40	ML40-15	TE-1119	
C4	2	3	300-473-1	PWE3002	EC2-3	TT6X2	ML2-6	TE-1051	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C7	470 5%		1469-00047		5R5T47	CM-19B-47LJ	MCJ244	MS-347
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C9	.47 3V			UK-474				HY130
C10	82		DI-82	DD-820	L10Q82	CCD-820	GP482	10TS-Q82
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C12	510 5%		1469-00051		5R5T51	CM-19B-51LJ		MS-351
C13	.47 3V			UK-474				HY130
C14	.47 3V			UK-474				HY130
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C16	510 5%		1469-00051		5R5T51	CM-19B-51LJ		MS-351
C17	39		DI-39	DD-390	L10Q39	CCD-390	GP439	10TS-Q39
C18	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C19	.2mfd 10V			UK10-204				HY235

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REGENCY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2000Ω	½	300-621-2					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	33K	
R3	10K	
R4	2200Ω	
R5	220Ω	
R6	33K	
R7	220Ω	
R8	1500Ω	

ITEM No.	RATING	REMARKS
R9	18K	
R10	1500Ω	
R11	220Ω	
R12	33K	Note 1
R13	1000Ω	
R14	10Ω	
R15	1900Ω 5%	Note 1

ITEM No.	RATING	REMARKS
R16	220Ω	
R17	1200Ω	Note 1
R18	56Ω	
R19	4.7Ω	
R20	27Ω	
R21	100Ω	

Note 1. Value may vary. Replace with same value as original.

PRINTED BOARD

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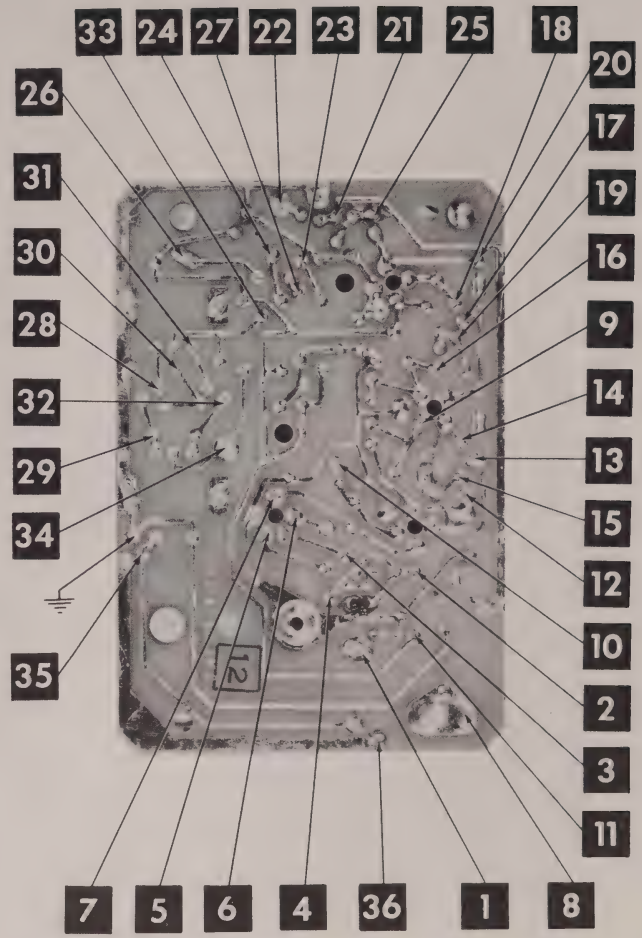


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		REGENCY PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	100-740-1						
L2	Osc. Coil	300-774-2						
L3	1st IF Trans.	300-682-6						
L4	2nd IF Trans.	300-682-6						
L5	3rd IF Trans.	300-682-7						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	REGENCY PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1 :	1	300-704 ①						① Alternate Part #300-704A

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	REGENCY PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	175Ω CT	12Ω	300-705 ①				TA-19			① Alternate Part # 300-705A

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	REGENCY PART No.	QUAM PART No.	
SP1	3"	PM	12-14Ω	300-606		

BATTERIES

ITEM No.	VOLTAGE	REGENCY PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			Z		1015		M-15R	3 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		REGENCY PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	①		1N64	1N295	1N295	Overload & AVC (Pigtail)
M3	①		1N64	1N295	1N295	Detector (Pigtail)

① 1N64G, CK706A, TS117 or equivalent, may be used in this application.

MISCELLANEOUS

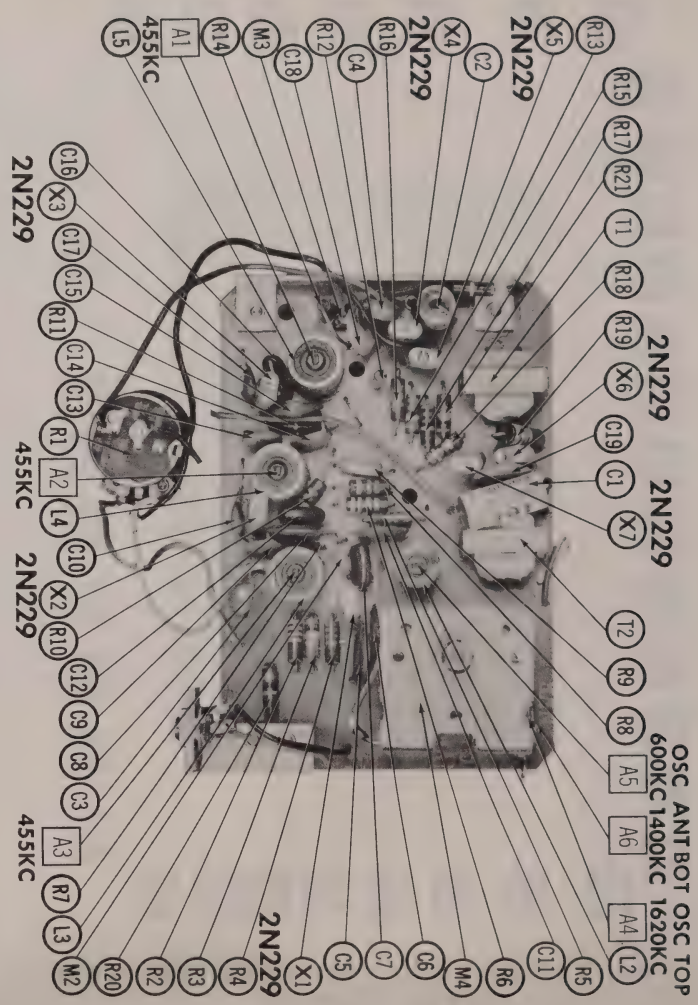
ITEM No.	PART NAME	REGENCY PART No.	NOTES
M4	Tuning Cap.	300-738-1	2 Gang (Ant. 10—135mmf, Osc. 18—98mmf)
	Printed Board	600-091C	
	Earphone	300-501	(Model EP-1)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	101-200	Tuning
Knob	101-190-1	Volume
Dial Panel	300-745	
Case	500-413	Assembly
Handle	101-191	
Carrying Case	500-423	Leather (Model LC-2)

CHASSIS—TOP VIEW



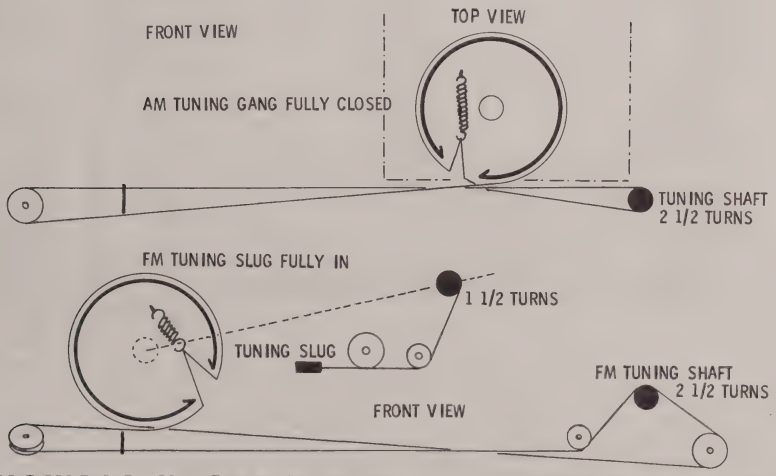
PHOTOFACT® Folder with CIRCUITRACE®

**SILVERTONE MODEL
28 (Ch. 132.48900)**

SILVERTONE MODEL
28 (Ch. 132.48900)

TRADE NAME	Silvertone Model 28 (Ch. 132.48900)		
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois		
TYPE SET	AC Operated 8 Tube FM-AM Tuner		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	39 Watts, .36 Amp. @117 Volts AC (FM)
TUNING RANGE—BROADCAST	535 — 1670KC	FREQ. MOD.	88 — 108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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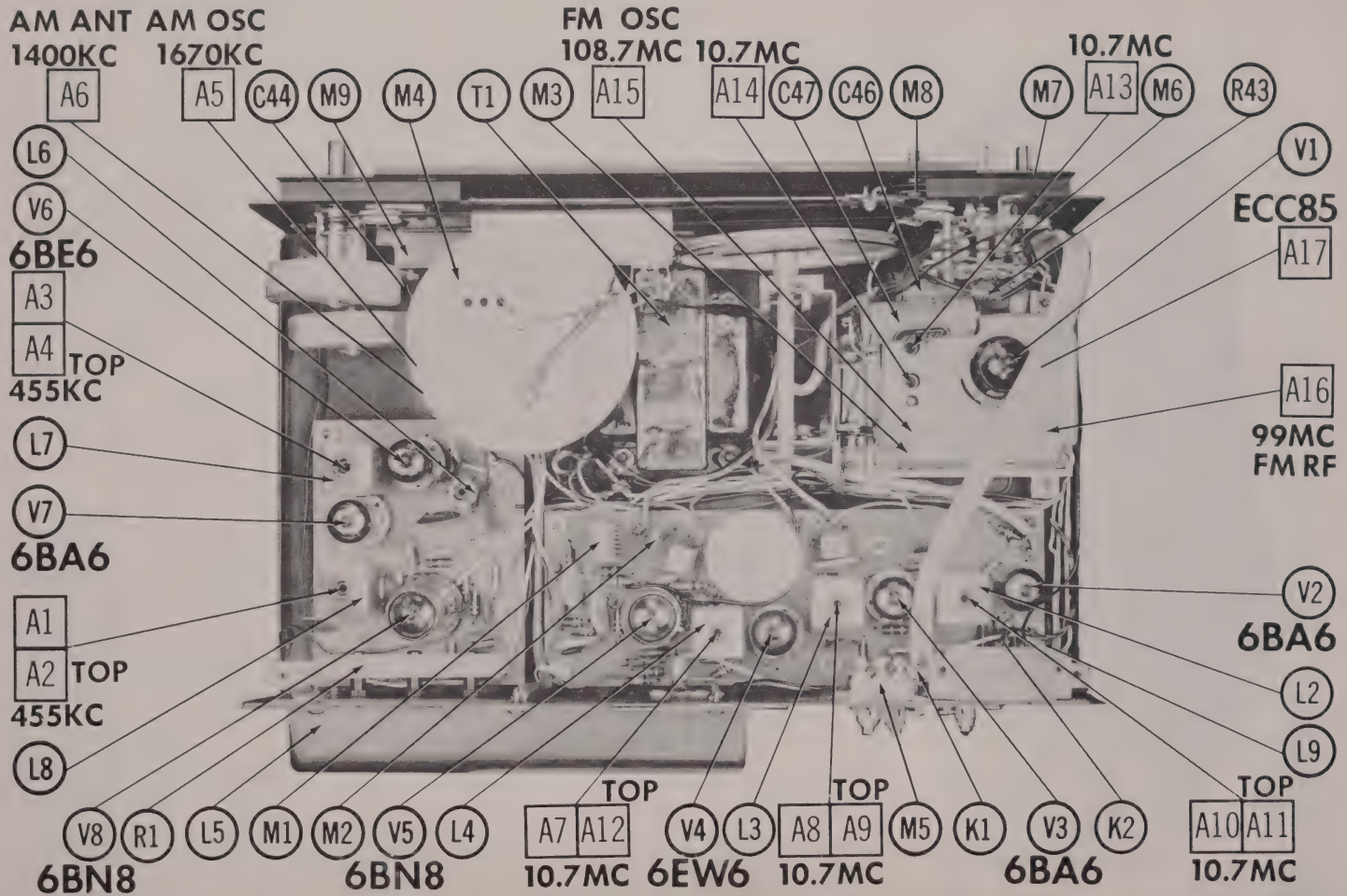
SET487 FOLDER 11



CHASSIS TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication on VTVM.

Suggested alignment tools:
- A1 thru A4, A7 thru A12.... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
- A5, A6..... GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
- A13, A14..... GENERAL CEMENT #8282, 8606, 8606-L, 9091 WALSCO #2526, 2541, 2542, 2543, 2544
- A15, A16, A17..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089 WALSCO #2512, 2525, 2528

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .05mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ 30% AM)	(AM) Tuning gang fully open.	AC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

Switch AFC off.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 1 (grid) of 1st FM IF Amp. Low side to chassis.	10.7MC (Unmod.)	(FM) High end stop.	DC probe thru 100K to point (B). Common to chassis.	A7, A8, A9, A10, A11	Adjust for maximum deflection.
5.	"	"	"	DC probe to point (C). Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	Across FM antenna (72Ω) terminals.	"	"	DC probe thru 100K to point (B). Common to chassis.	A13, A14	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Switch AFC off.
Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to pin 1 (grid) of 1st FM IF Amp. Low side to chassis.	10.7MC (450KC Swp)	(FM) High end stop.	Vert. amp. thru 27K to point (B). Low side to chassis.	A7, A8, A9, A10, A11	Adjust for maximum gain and symmetry of response similar to Fig. 1.
5.	"	"	"	Vert. amp. to point (C). Low side to chassis.	A12	Adjust to place marker at the center of cross-over lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.
6.	Across FM antenna (72Ω) terminals.	"	"	Vert. amp. thru 27K to point (B). Low side to chassis.	A13, A14	Adjust for maximum gain and symmetry of response similar to Fig. 1.

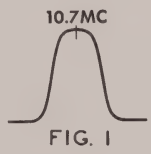


FIG. 1

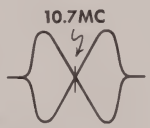
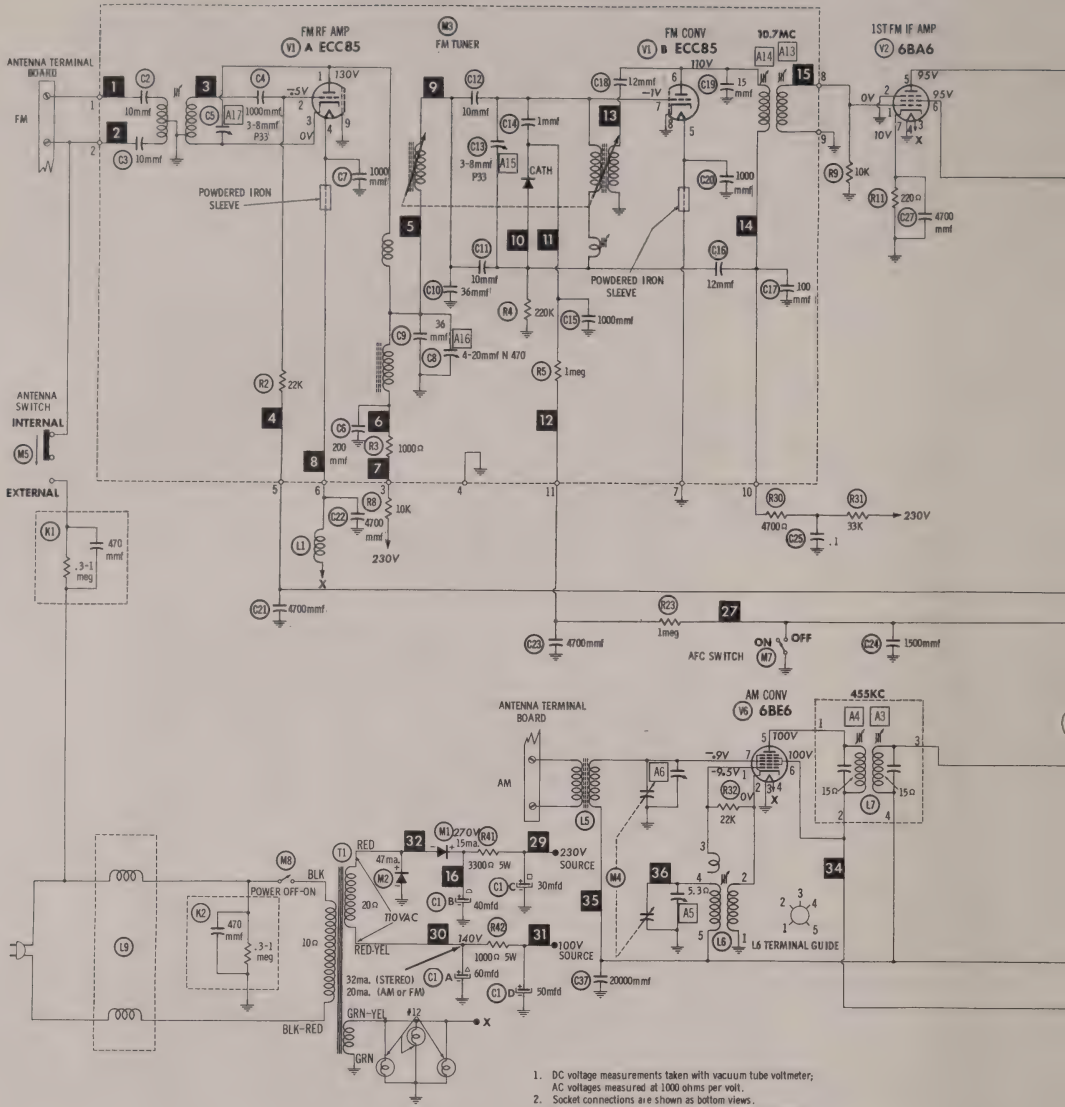


FIG. 2

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna (300Ω) terminals with 120Ω in each lead.	108.7MC (Unmod.)	(FM) High end stop.	DC probe thru 100K to point (B). Common to chassis.	A15	Adjust Idler tension screw for no tension on FM tuner string (not dial string). Adjust A15 for maximum deflection.
8.	"	99MC	99MC	"	Idler Adjustment screw	Adjust to set calibration.
9.	"	"	"	"	A16	Adjust for maximum deflection.

If oscillation occurs, adjust A17 slightly to stop oscillations and repeat steps 7, 8, 9. Check for proper tracking.



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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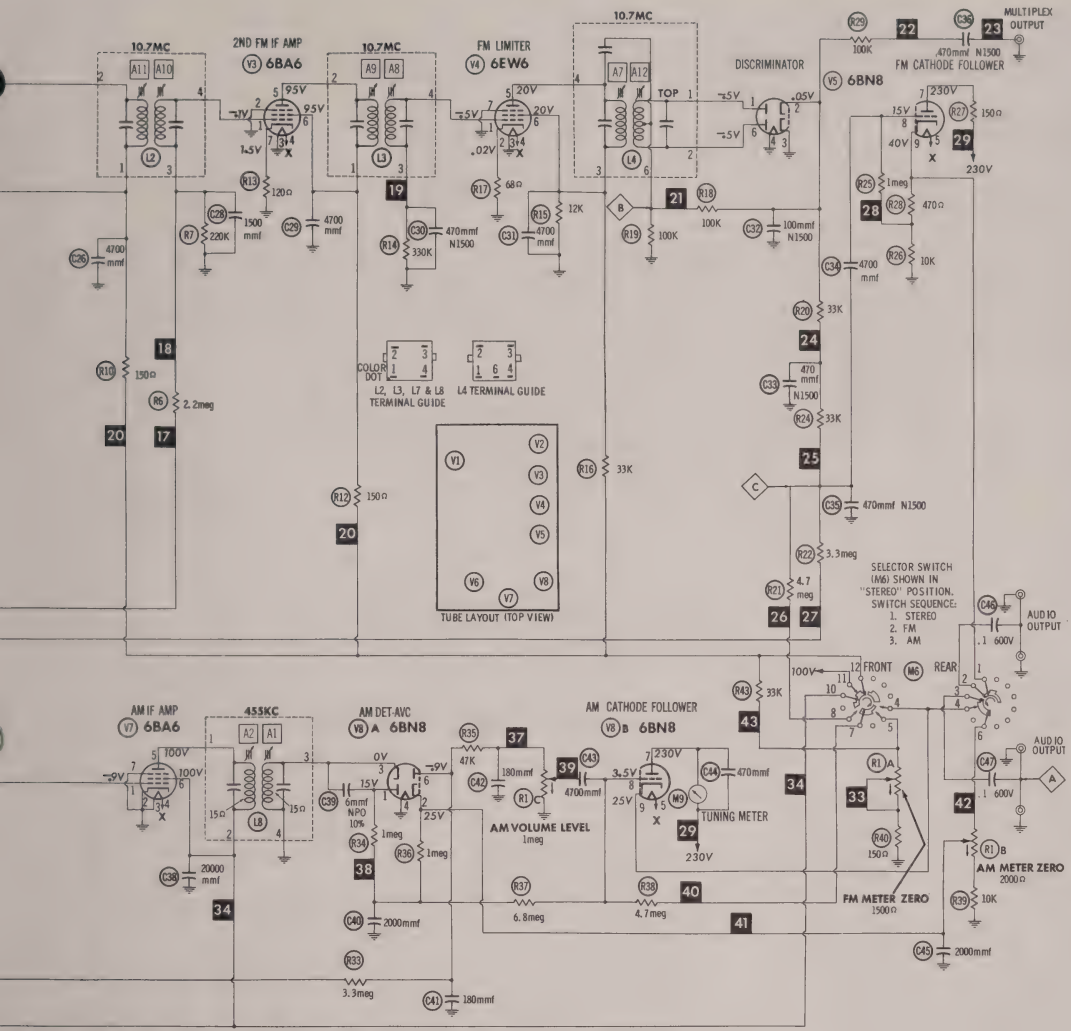

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	†14K	2.4meg	0Ω	.1Ω	0Ω	†41K	220K	0Ω	0Ω
V2	6BA6	.1Ω	0Ω	.1Ω	0Ω	††1100Ω	††1100Ω	220Ω		
V3	6BA6	220K	0Ω	0Ω	.1Ω	††1100Ω	††1100Ω	120Ω		
V4	6EW6	330K	68Ω	0Ω	.1Ω	††25K	††25K	0Ω		
V5	6BN8	100K	200K	0Ω	0Ω	.1Ω	100K	††3400Ω	1meg	10K
V6	6BE6	22K	.6Ω	0Ω	.1Ω	††1000Ω	††1000Ω	4.3meg		
V7	6BA6	4.3meg	0Ω	0Ω	.1Ω	††1000Ω	††1000Ω	0Ω		
V8	6BN8	2meg	10K	15Ω	0Ω	.1Ω	1meg	†6800Ω	7.8meg	12K

ALL MEASUREMENTS TAKEN IN STEREO POSITION
† MEASURED FROM OUTPUT OF M1.
†† MEASURED FROM JUNCTION OF C1D AND R42.

SILVERTONE MODEL 28 (Ch. 132.48900)

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	ECC85/6AQ8	V6	AM Converter	6BE6
V2	1st FM IF Amplifier	6BA6	V7	AM IF Amplifier	6BA6
V3	2nd FM IF Amplifier	6BA6	V8	AM Detector-AM AVC-AM Cathode Follower-Meter Amp.	6BN8
V4	FM Limiter	6EW6			
V5	Discriminator-FM Cathode Follower	6BN8			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	150	43711-7					TVL-3788	
B	▲40	300						TVA-1415	
C	■30	300							
D	50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10							
C3	10							
C4	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C5	3-8 P33							
C6	200							
C7	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D1
C8	4-20 N470							
C9	36							
C10	36							
C11	10							
C12	10							
C13	3-8 P33							
C14	1							
C15	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D1
C16	12							
C17	100							
C18	12							
C19	15							
C20	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D1
C21	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C22	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C23	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C24	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C25	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C26	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C27	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C28	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C29	4700		BPD-0047	DD-472	BYA10D47M	CCD-472 *	GP247	5HK-D47
C30	470 N1500	#43957-18				*		
C31	4700		BPD-0047	DD-472	BYA10D47M	CCD-472 *	GP247	5HK-D47
C32	100 N1500	#43957-1				*		
C33	470 N1500	#43957-18				*		
C34	4700		BPD-0047	DD-472	BYA10D47M	CCD-472 *	GP247	5HK-D47
C35	470 N1500	#43957-18				*		
C36	470 N1500	#43957-18				*		
C37	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C38	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C39	6 NPO 10%	#43957-6			C10V6C			

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C40	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C41	180		DI-180	DD-181	L10T18	CCD-181	GP318	10TS-T18
C42	180		DI-180	DD-181	L10T18	CCD-181	GP318	10TS-T18
C43	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C44	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C45	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C46	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C47	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1

Silvertone Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	Non-Linear	46976-1					Meter Zero, FM
B	2000Ω							Meter Zero, AM
C	1meg							Volume Level, AM

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	22K	
R3	1000Ω	
R4	220K	
R5	1meg	
R6	2.2meg	
R7	220K	
R8	10K	
R9	10K	
R10	150Ω	
R11	220Ω	
R12	150Ω	
R13	120Ω	
R14	330K	
R15	12K	

ITEM No.	RATING	REMARKS
R16	33K	
R17	68Ω	
R18	100K	
R19	100K	
R20	33K	
R21	4.7meg	
R22	3.3meg	
R23	1meg	
R24	33K	
R25	1meg	
R26	10K	
R27	150Ω	
R28	470Ω	
R29	100K	

ITEM No.	RATING	REMARKS
R30	4700Ω	
R31	33K	
R32	22K	
R33	3.3meg	
R34	1meg	
R35	47K	
R36	1meg	
R37	6.8meg	
R38	4.7meg	
R39	10K	
R40	150Ω	
R41	3300Ω 5W	
R42	1000Ω 5W	
R43	33K	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA SILVERTONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Fil. Choke	42761-1				4602		1. 2uh
L2	2nd FM IF Trans.	46971-1	16-3490	16-3490		1463-PC		
L3	3rd FM IF Trans.	46971-1	16-3490	16-3490		1463-PC		
L4	Discriminator	46972-1	17-3491	17-3491		1464-PC		
L5	Loopstick	46975-1	14-7002	14-7002	BC-418			
L6	AM Osc. Coil	43644-1						
L7	1st AM IF Trans.	44282-1	16-6780	16-6780	BC-356	12-PC9	RF-4	
L8	2nd AM IF Trans.	44282-1	16-6780	16-6780	BC-357	13-PC10	RF-4	
L9A	Line Choke	24308-2						3uh
B	Line Choke							3uh

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
T1	117V @ .4A	110V @ .140A	6.3V @ 3A	46070-2						

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Antenna Filter	470mmf, .3-1meg	47796-2	Centralab RC-471 Sprague AC1-1
K2	Line Filter	470mmf, 3-1meg	47796-2	Centralab RC-471 Sprague AC1-1

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	SILVERTONE PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.015A	* 44465-4	* T065	* 1234AH	* 65AS	♦ SR200	* Selenium Type
M2	.015A	♦ 47126-1	♦ 2E4	♦ SD500	♦ K200	♦ SR200	♦ Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	FM Tuner	46969	Complete
M4	Tuning Cap.	46970-1	2 Gang (Ant. 4–265mmf, Osc. 5–102mmf)
M5	Switch	25525	Antenna (SPDT Slide Type)
M6	Switch	46967-1	Function Selector (Rotary Wafer)
M7	Switch	46968-1	AFC Off-On
M8	Switch	46968-1	Power Off-On
M9	Meter	47004	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	46934-29	Tuning
Knob	47462-29	Function Selector
FM Pointer	46944	
AM Pointer	46945	
Dial Scale	46929	
Cabinet Top	46980-29	
Cabinet Front	46927	
Cabinet Bottom	47000-1	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

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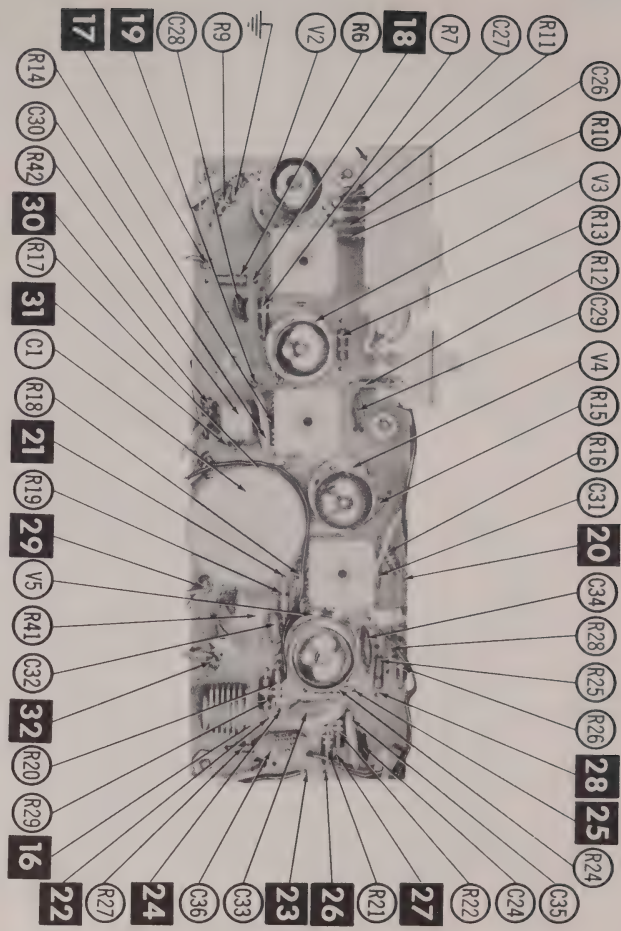
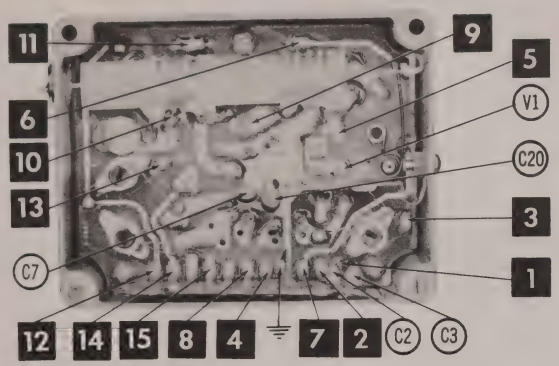
FM IF PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



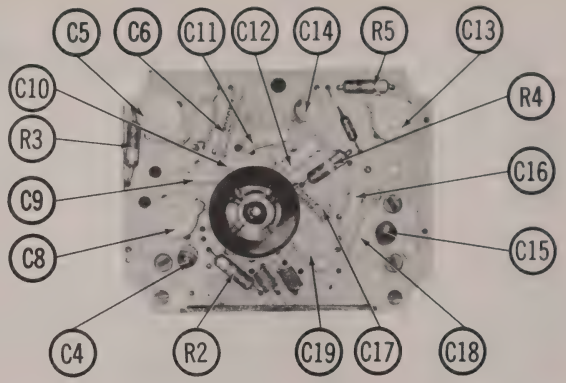
SILVERTONE MODEL 28 (Ch. 132.48900)

FOLDER 11



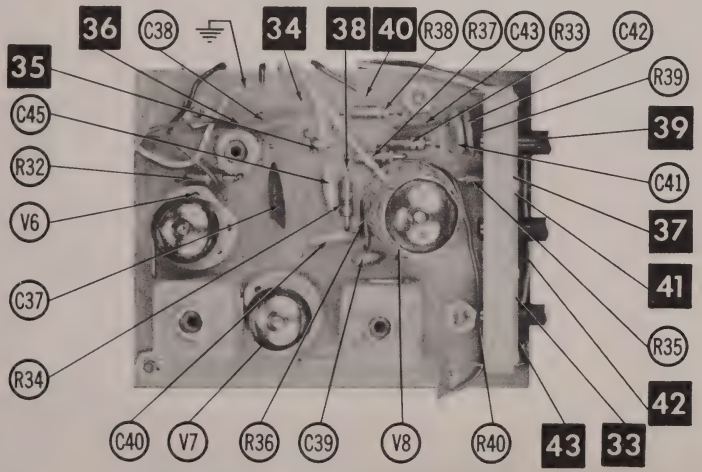
A Howard W. Sams CIRCUITRACE* Photo

FM TUNER - BOTTOM VIEW



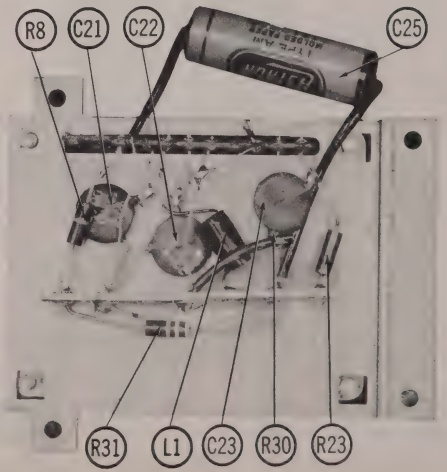
FM TUNER - TOP VIEW

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



A Howard W. Sams CIRCUITRACE* Photo

AM IF PRINTED BOARD

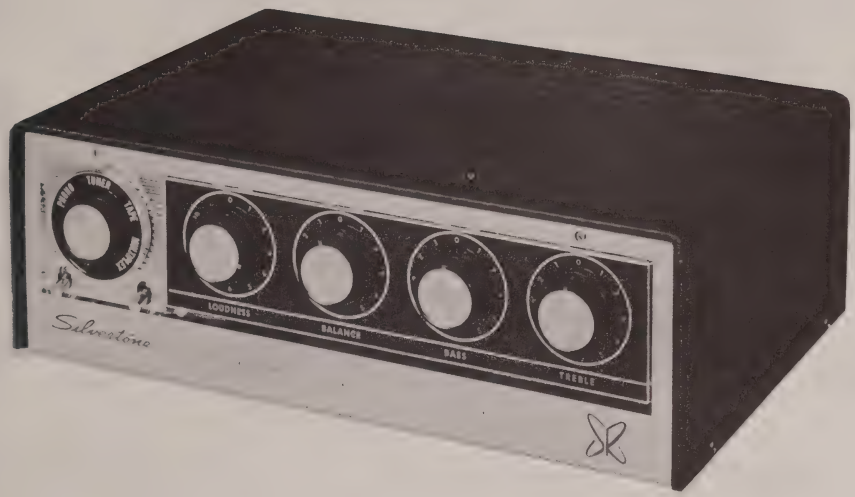


FM TUNER - REAR VIEW

PHOTOFACT® Folder with CIRCUITRACE®

SILVERTONE MODEL 29
(Ch. 132.48800)

SILVERTONE MODEL 29
(Ch. 132.48800)



SILVERTONE MODEL 29
(Ch. 132.48800)

TRADE NAME	Silvertone Model 29 (Ch. 132.48800)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated 7 Tube Stereo Amplifier
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 92 Watts, .85 Amp. @ 117 Volts AC

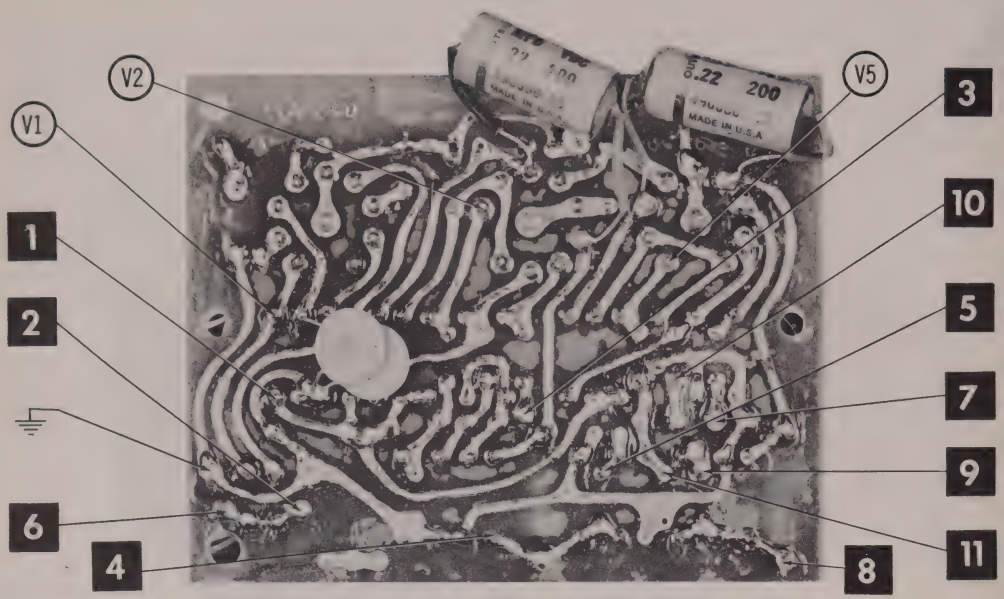
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JV720

DATE 6-60 SET487 FOLDER 12

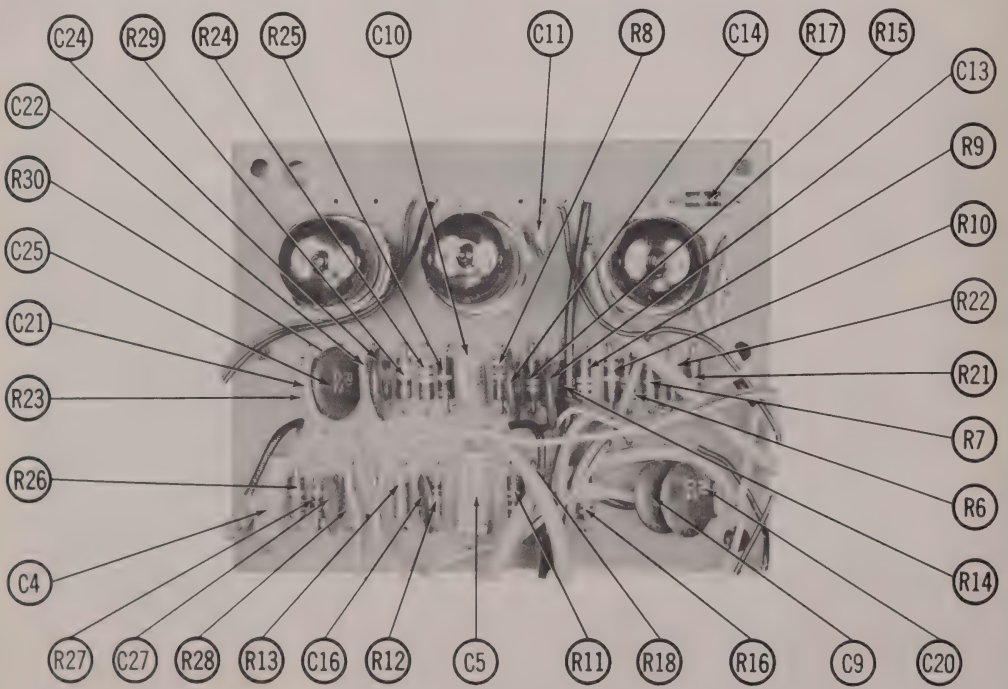
SET487 FOLDER 12



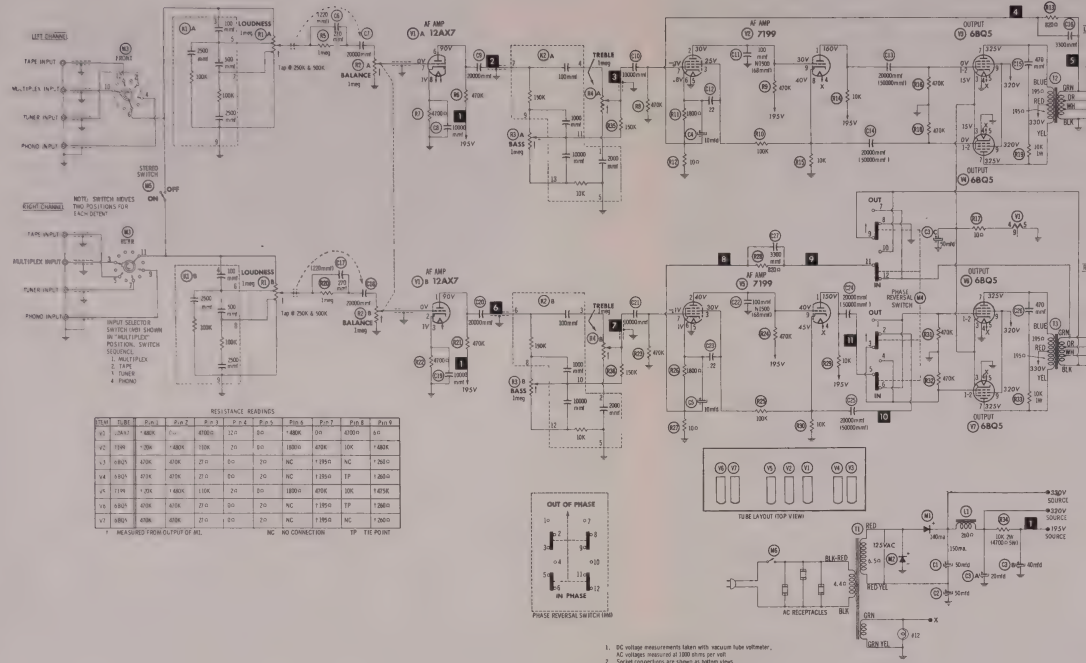
A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD-TOP VIEW



NOTE: SWITCH MOVES TWO POSITIONS FOR EACH DETENT

INPUT SELECTOR SWITCH (WIF) SHOWN IN "MULTIPLEX" POSITION. SWITCH SEQUENCE:
1. MULTIPLEX
2. TAPE
3. TUNER
4. PHONO

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	*480K	0Ω	470Ω	12Ω	0Ω	*480K	0Ω	470Ω	0Ω
V2	7199	*35K	*480K	100K	2Ω	0Ω	180Ω	470K	10K	*480K
V3	6BQ5	470K	470K	470K	2Ω	0Ω	2Ω	NC	*195Ω	NC
V4	6BQ5	470K	470K	470K	2Ω	0Ω	2Ω	NC	*195Ω	TP
V5	7199	*35K	*480K	110K	2Ω	0Ω	180Ω	470K	10K	*470K
V6	6BQ5	470K	470K	470K	2Ω	0Ω	2Ω	NC	*195Ω	TP
V7	6BQ5	470K	470K	470K	2Ω	0Ω	2Ω	NC	*195Ω	NC

* MEASURED FROM OUTPUT OF M1. NC NO CONNECTION TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

CIRCUITRACE

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SILVERTONE MODEL 29 (Ch. 132.48800)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7
V2	Left Channel AF Amp. - Phase Inverter	7199
V3	Left Channel Output	6BQ5
V4	Left Channel Output	6BQ5
V5	Right Channel AF Amp. - Phase Inverter	7199
V6	Right Channel Output	6BQ5
V7	Right Channel Output	6BQ5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	50	200	44772-6	PRS1585	BR5025	TC59	TD-40-250	TVA-1511	
C2	50	200	44772-6	PRS1585	BR5025	TC59	TD-40-250	TVA-1511	
C3A	20	350	44772-5	PR3-030	BBRQ222245		WQ795	TVAS-3596 *	
B	40	350							
C	50	25							
C4	10	10	44396-4	PWE10010	EC10-10	TT12X10	ML10-15	TE-1114	
C5	10	10	44396-4	PWE10010	EC10-10	TT12X10	ML10-15	TE-1114	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	270	(220) †	DI-270	DI-271	L10T27	CCD-271	GP327	10TS-T27
C7	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C9	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103 *	GP110	5HK-S10
C11	100 N1500	(68) †						
C12	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C13	20000	(50000) †	BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C14	20000	(50000) †	BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C15	470		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C16	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP332	5HK-D33
C17	270	(220) †	DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C18	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C20	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103 *	GP110	5HK-S10
C22	100 N1500	(68) †		TCL-100				

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C23	.22 200V		P288N-22		CUB2S22	2DP-4-224	GEM-2022	2TM-P22
C24	20000	(50000) †	BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C25	20000	(50000) †	BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C26	470		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C27	3300		BPD-033	DD-332	BYA10D33	CCD-332	GP332	5HK-D33

† Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg *		47600-2	BT-167				Loudness, Left Channel
B	1meg *			STR-167				Loudness, Right Channel
R2A	1meg		47600-3	B-744			FA16A	Balance, Left Channel
B	1meg			SR-68			RU16R	Balance, Right Channel
C	Shaft			Not Req.			CS3500	
R3A	1meg		47600-1	B-69		AD47-1meg-S	FA16L	Bass, Left Channel
B	1meg			SR-69		Not Req.	RU16L	Bass, Left Channel
C	Shaft			Not Req.		FS-3	CS3500	
R4A	1meg		47600-1	B-69		AD47-1meg-S	FA16L	Treble, Left Channel
B	1meg			SR-69		Not Req.	RU16L	Treble, Right Channel
C	Shaft			Not Req.		FS-3	CS3500	

* Taps @ 250K and 500K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	1meg	
R6	470K	
R7	4700Ω	
R8	470K	
R9	470K	
R10	100K	
R11	1800Ω	
R12	10Ω	
R13	820Ω	
R14	10K	
R15	10K	

ITEM No.	RATING	REMARKS
R16	470K	
R17	10Ω	
R18	470K	
R19	10K 1W	
R20	1meg	
R21	470K	
R22	4700Ω	
R23	470K	
R24	470K	
R25	100K	
R26	1800Ω	

ITEM No.	RATING	REMARKS
R27	10Ω	
R28	820Ω	
R29	10K	
R30	10K	
R31	470K	
R32	470K	
R33	10K 1W	
R34	10K 2W	(4700Ω 5W) *
R35	150K	
R36	150K	

*Alternate

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L1	.025A	260Ω	7HY	47828-1						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .85A	125V@ .570A	6.3V@ 4.1A	46070-3						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5500Ω CT	16Ω Tap @8Ω,4Ω	47598-1	24S43				24S43		
T3	5500Ω CT	16Ω Tap @8Ω,4Ω	47598-1	24S43				24S43		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Loudness Comp.	(2) 100mmf, (2) 500mmf, (4) 2500mmf, (4) 100K	47602	
K2	Tone Comp.	(2) 100mmf, (2) 1000mmf, (2) 2000mmf, (2) 10000mmf, (2) 10K, (2) 150K	47603	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	SILVERTONE PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.150A	47126-2	5E4	HA504	K200	SR200	Silicon Type
M2	.150A	47126-2	5E4	HA504	K200	SR200	Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Switch	46967-2	Input Selector
M4	Switch	47597	Phase Reversal (DPDT, Slide Type)
M5	Switch	46968-1	Stereo (Toggle)
M6	Switch	46968-1	Off-On (Toggle)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

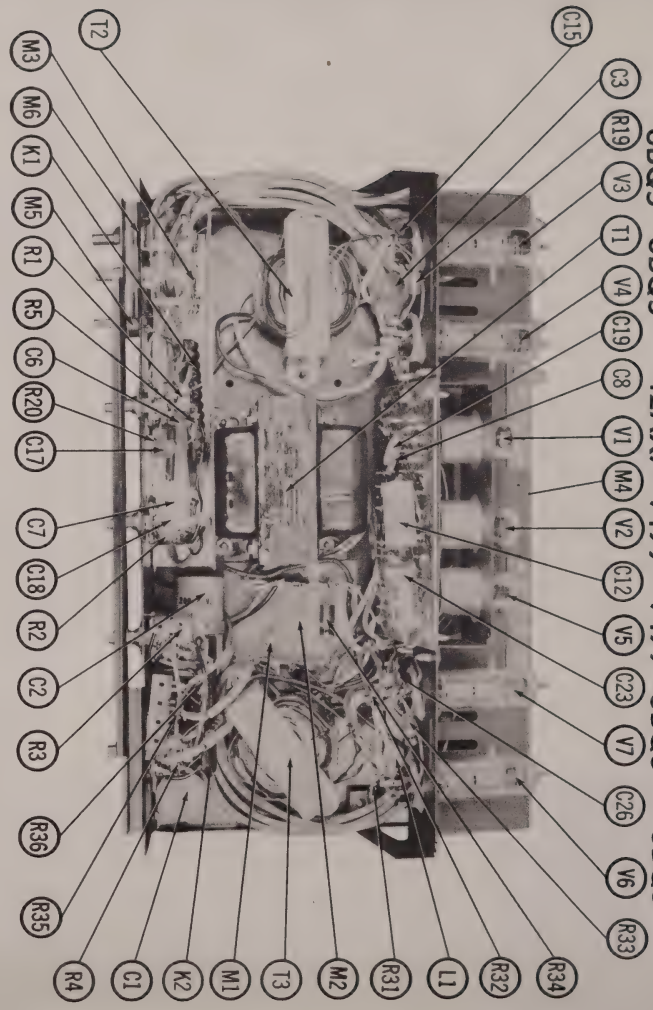
NAME	PART NO.	DESCRIPTION
Knob	46940-291	Loudness, Balance, Bass, & Treble
Knob	47592-29	Function
Cabinet	47465	Front
Cabinet	47543-29	Top

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

SONIC MODELS S-100, S-200, 19C, 1020, 1021, 2011, 2020, 2021 (Ch. 19, 343, 344)

SONIC MODELS S-100, S-200, 19C, 1020, 1021, 2011, 2020, 2021 (Ch. 19, 343, 344)

MODEL 1020

SONIC MODELS S-100, S-200, 19C, 1020, 1021, 2011, 2020, 2021 (Ch. 19, 343, 344)

TRADE NAME	Sonic Models S-100 (Ch. 343); S-200 (Ch. 344); 19C (Ch. 19); 1020, 1021, (Ch. 19, 343); 2011, 2020, 2021 (Ch. 19, 344)
MANUFACTURER	Sonic Industries Inc., 19 Wilbur Street, Lynbrook, Mass.
TYPE SET	AC Operated 7 Tube FM-AM Tuner (Ch. 19) and 3 Tube Stereo Amplifier (Ch. 343) or 4 Tube Stereo Amplifier (Ch. 344)
POWER SUPPLY	110-120 Volts AC, 60 Cycles
TUNING RANGE	BROADCAST 540-1620KC FREQ. MOD. 88-108MC
RATING	26 Watts, .33 Amp. @ 117 Volts AC (Tuner) 48 Watts, .5 Amp. @ 117 Volts AC (Amp. Ch. 343) 69 Watts, .68 Amp. @ 117 Volts AC (Amp. Ch. 344)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JN587

TUNER CHASSIS 19 PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Mixer	12AT7	V5	2nd FM IF Amp. -AM Det. AVC	6AU6
V2	FM Osc. -FM AFC	12AT7			
V3	AM Converter	6BE6	V6	FM Limiter	6AU6
V4	1st FM-AM-IF Amp.	6BA6	V7	Discriminator	6AL5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	CE-626	PRS3800	BBRT84215	TCT3119	TDLT-7	TVA-3445	
B	60	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	470 10%		1469-00047	D6-471	5R5T47	CM-20B-471K	MCJ244	MS-347
C3	47 10%	(.47mmf) *	1469-000047	D6-470	22R5Q47	CM-20B-470K	MCB225	MS-447
C4	.68 10%		NPO-SI .68	TCZ-R68				
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	2.2 5%		NPO-SI 2.2	TCZ-2R2	C10V2.2C	CCTO-2R2	CNO-522	10TCC-V22 10TCR-V50
C8	5 N220	Note 1						
C9	100 10%		1469-0001	D6-101	22R5T1	CM-20B-101K	MCB235	MS-31
C10	470 10%		1469-00047	D6-471	5R5T47	CM-20B-471K	MCJ244	MS-347
C11	10 10%		1469-00001	D6-100	22R5Q1	CM-20B-100K	MCB215	MS-410
C12	5000	Note 1	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	470 10%		1469-00047	D6-471	5R5T47	CM-20B-471K	MCJ244	MS-347
C14	470 10%		1469-00047	D6-471	5R5T47	CM-20B-471K	MCJ244	MS-347
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S1
C16	47 10%		1469-000047	D6-470	22R5Q47	CM-20B-470K	MCB225	MS-447
C17	470 10%		1469-00047	D6-471	5R5T47	CM-20B-471K	MCJ244	MS-347
C18	220 5%	(100mmf) *	1469-00022	D6-221	22R5T22	CM-20B-221J	CNO-322	MS-322
C19	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	5000	(10000mmf) *	BPD-005	DD-503	BYA10D5	CCD-502	B-250	5HK-D50
C23	150 10%		1469-00015	D6-151	22R5T15	CM-20B-151K	MCB236	MS-315
C24	150 10%		1469-00015	D6-151	22R5T15	CM-20B-151K	MCB236	MS-315
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	470 10%		1469-00047	D6-471	5R5T47	CM-20B-471K	MCJ244	MS-347
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	100 10%		1469-0001	D6-101	22R5T1	CM-20B-101K	MCB235	MS-31
C30	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	270 5%	(470mmf) *	1469-00027	TCZ-270	22R5T27	CM-20B-271J	CNO-327	MS-327
C32	270 5%		1469-00027	TCZ-270	22R5T27	CM-20B-271J	CNO-327	MS-327
C33	.05 200V	Note 1	P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C34	.05 200V	Note 1	P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	5000		BPD-005	DD-503	BYA10D5	CCD-502	B-250	5HK-D50
C40	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C41	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Note 1. Not used in some versions.
* Alternate

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	68Ω	
R2	3.3meg	
R3	15K	
R4	1000Ω	
R5	22K	
R6	100Ω	
R7	470K	
R8	47K	
R9	1000Ω	
R10	1meg	
R11	22K	

ITEM No.	RATING	REMARKS
R12	3300Ω	
R13	2.2meg	
R14	270K	
R15	1000Ω	
R16	47K	
R17	68Ω	
R18	1000Ω	
R19	100K	(47K) *
R20	1000Ω	
R21	10K	
R22	15K	

ITEM No.	RATING	REMARKS
R23	100K 5%	
R24	33K	
R25	100K 5%	
R26	33K	
R27	1meg	
R28	1meg	
R29	470K	
R30	220Ω	
R31	220Ω	

* Alternate

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA SONIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil		19-2003	19-2003		4584		.24uh
L2	RF Choke							3.3uh
L3	FM RF Coil							
L4	FM Mixer Coil							
L5	Cathode Choke		19-1000	19-1000	BC-561	4602		1uh
L6	FM Osc. Coil							3.3uh
L7	RF Choke							
L8	Loopstick				BC-419			
L9	AM Osc. Coil							
L10	1st FM IF Trans.		16-3490	16-3490		1463-PC		
L11	1st AM IF Trans.		16-6780	16-6780	BC-356	13-PC1	RF-4	
L12	2nd FM IF Trans.		16-3490	16-3490		1463-PC		
L13	2nd AM IF Trans.		16-6780	16-6780	BC-357	13-PC2	RF-4	
L14	3rd FM IF Trans.		16-3490	16-3490		1463-PC		
L15	Discriminator							
L16	Fil. Choke				SW-631	4529		4.7uh

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA SONIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .33A	130V ⓐ .035A	6.3V ⓐ 2.1A	PT-19R						

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA SONIC PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.035A	①SR-65	①1234AH	① T065	① 65A	②SR200	① Selenium Type ② Silicon Type

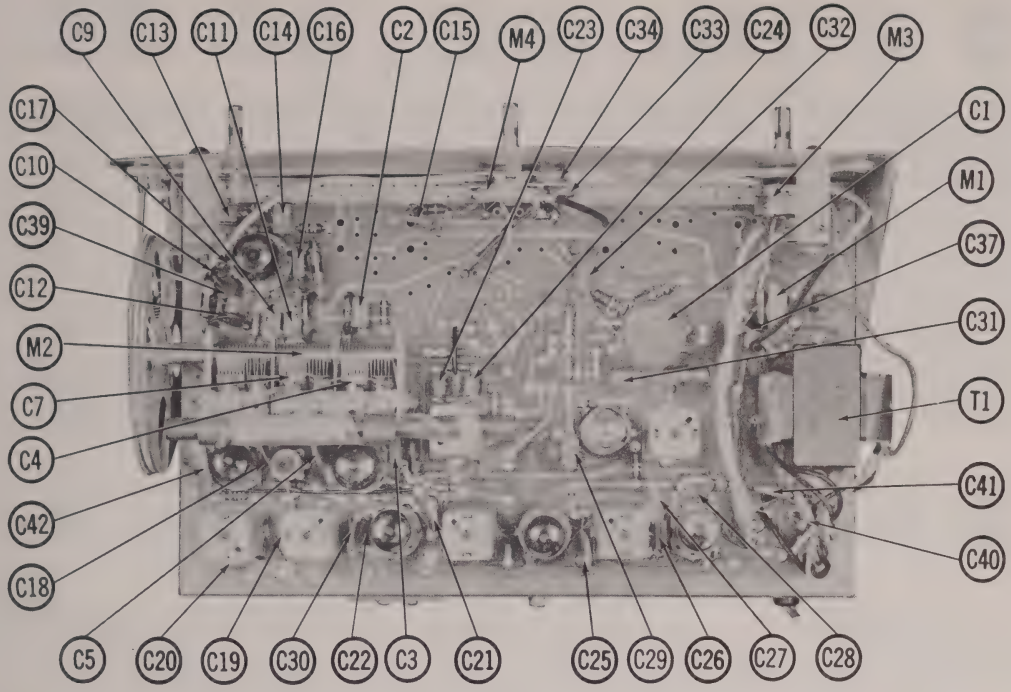
MISCELLANEOUS

ITEM No.	PART NAME	SONIC PART No.	NOTES
M2	Tuning Capacitor		3 Gang
M3	Switch		Off-On
M4	Switch		Function Selector

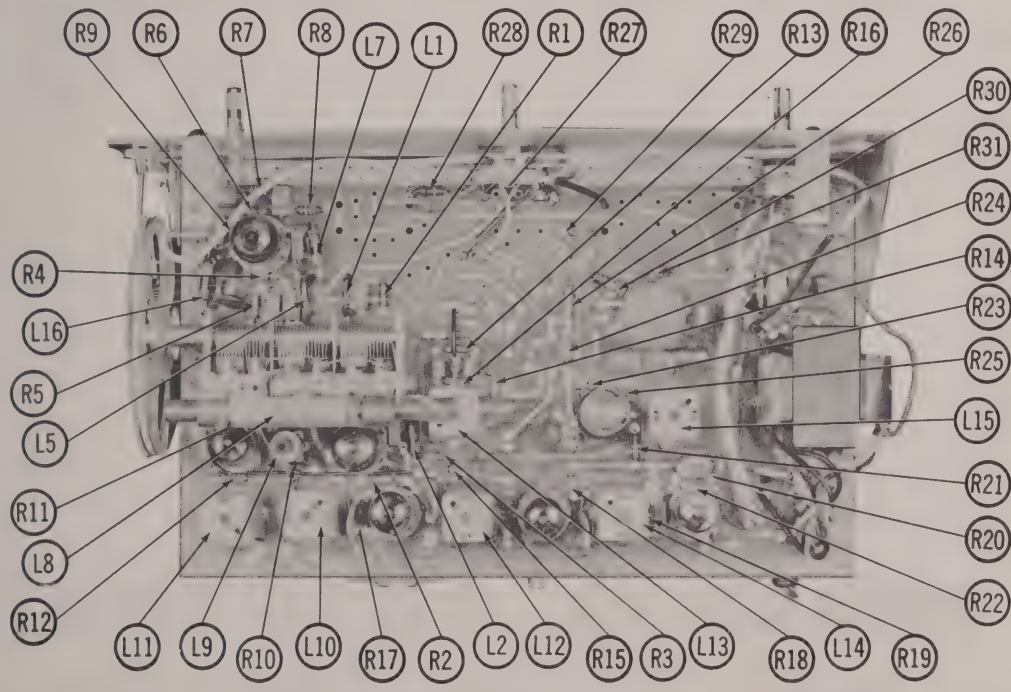
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

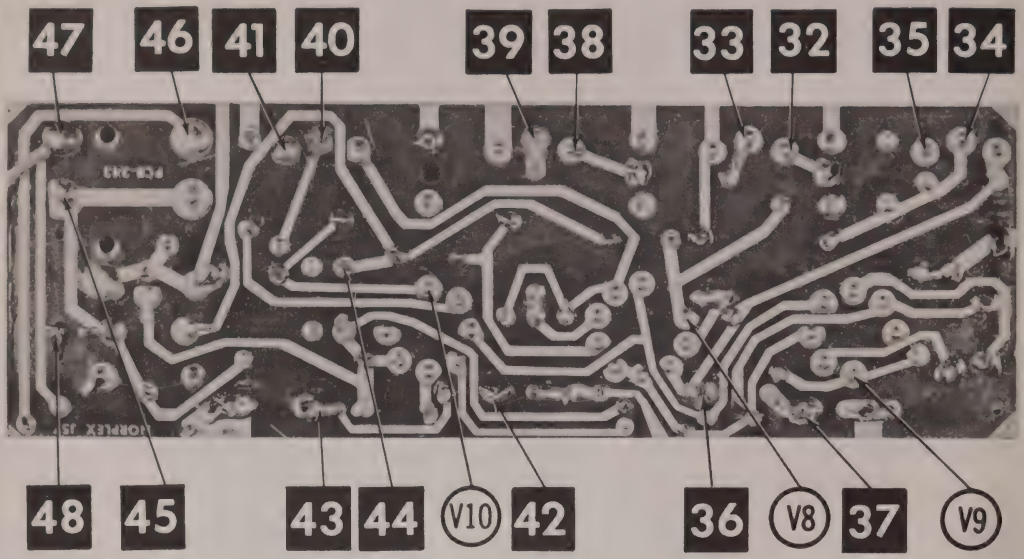
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



TUNER CHASSIS TOP VIEW – CAPACITOR & MISC. IDENT.



TUNER CHASSIS TOP VIEW – RESISTOR & INDUCTOR IDENT.



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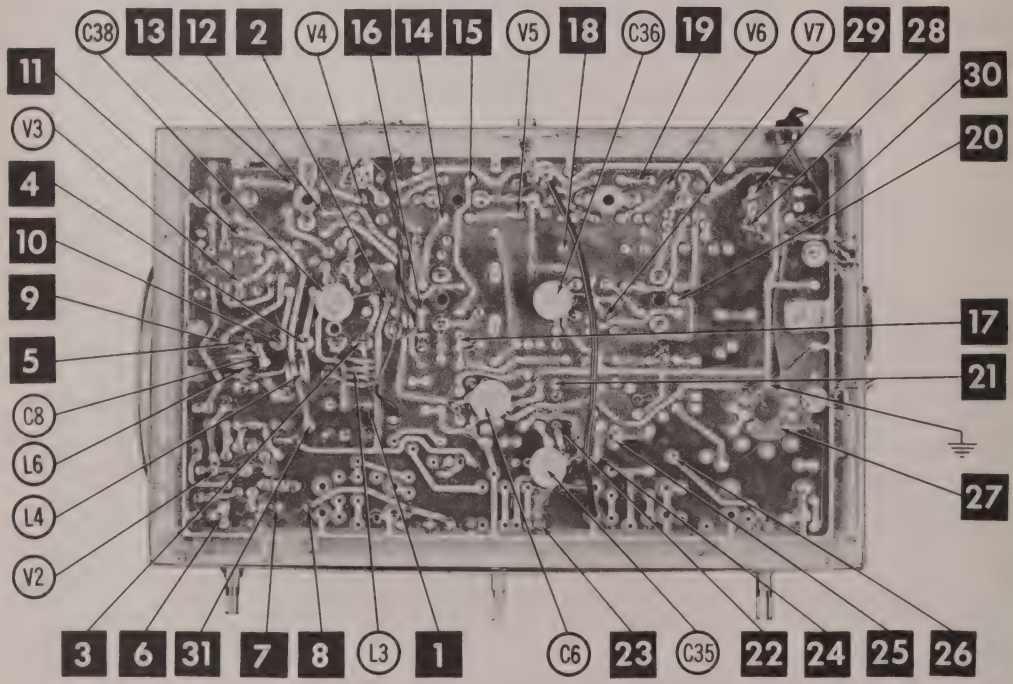
PRINTED BOARD
AMP. CHASSIS 343

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



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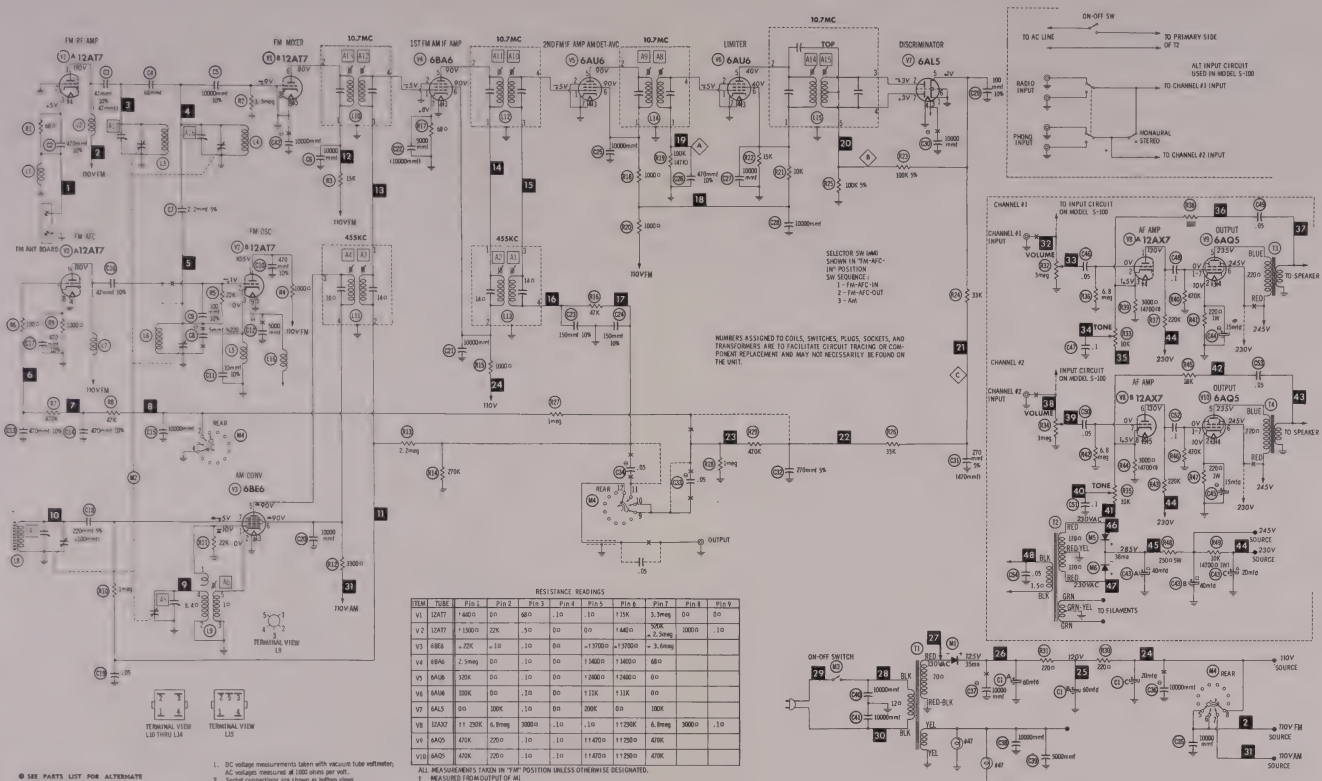
TUNER PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AT7	†460Ω	0Ω	68Ω	.1Ω	1Ω	†15K	3.3meg	0Ω	0Ω
V2	12AT7	†1500Ω	22K	50Ω	0Ω	0Ω	†44Ω	500K + 2.5meg	1000Ω	.1Ω
V3	6BE6	∞ 22K	∞ 1Ω	.1Ω	0Ω	∞ †37000Ω	∞ †37000Ω	∞ 3.6meg		
V4	6BA6	2.5meg	0Ω	.1Ω	0Ω	†1400Ω	†1400Ω	68Ω		
V5	6AU6	320K	0Ω	.1Ω	0Ω	†2600Ω	†2600Ω	0Ω		
V6	6AU6	330K	0Ω	.1Ω	0Ω	†11K	†11K	0Ω		
V7	6AL5	0Ω	300K	.1Ω	0Ω	200K	0Ω	100K		
V8	12AX7	†† 250K	6.8meg	3000Ω	.1Ω	.1Ω	†† 250K	6.8meg	3000Ω	.1Ω
V9	6AQ5	470K	220Ω	.1Ω	.1Ω	†† 470Ω	†† 250Ω	470K		
V10	6AQ5	470K	220Ω	.1Ω	.1Ω	†† 470Ω	†† 250Ω	470K		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1
†† MEASURED FROM OUTPUT OF M2
∞ MEASURED IN "AM" POSITION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages, measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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TUNER AND AMP. CHASSIS 343

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested alignment tools: A1 thru A4, A6, A8 thru A15..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A7, A16, A17..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to antenna stator lug of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open	Across Tuner Output Jack	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	"	A5	"
3.		Loop	540KC	"	Tuning gang fully closed	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1400KC	"	Tune to 1400KC Signal	"	A7	Adjust for maximum output while rocking tuning gang.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.001mfd	High side to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	FM (No AFC)	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe thru 1meg to point Ⓑ. Common to chassis.	A14	"
7.	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.001mfd	High side to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	FM (No AFC)	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1.
6.	"	"	"	"	"	Vert. Amp. thru 27K to point Ⓑ. Low side to chassis.	A14	"
7.	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A15	Adjust to place marker at the ceonter of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Two 150Ω Carbon Resistors	Across FM antenna terminals with 150Ω in each lead.	108MC (Unmod.)	FM (No AFC)	108MC	DC probe to point Ⓐ. Common to chassis.	A16	Adjust for maximum deflection.
9.	"	"	98MC	"	98MC Signal	"	A17	Adjust for maximum deflection while rocking tuning gang.

FIG. 1

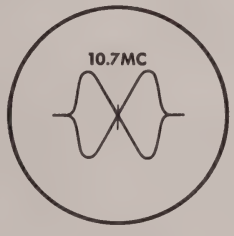
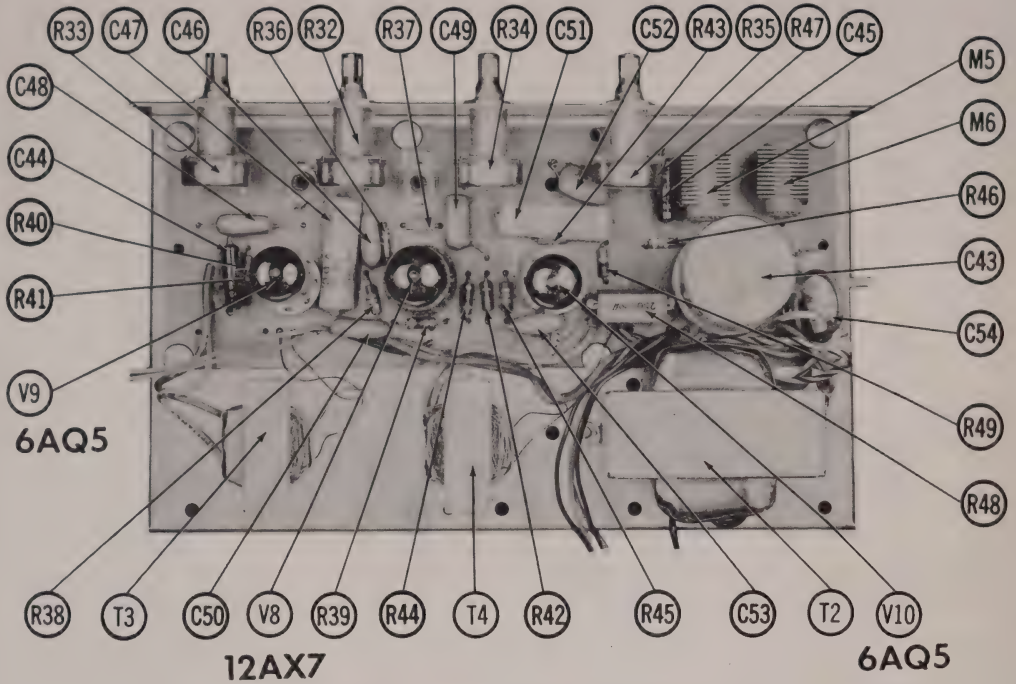
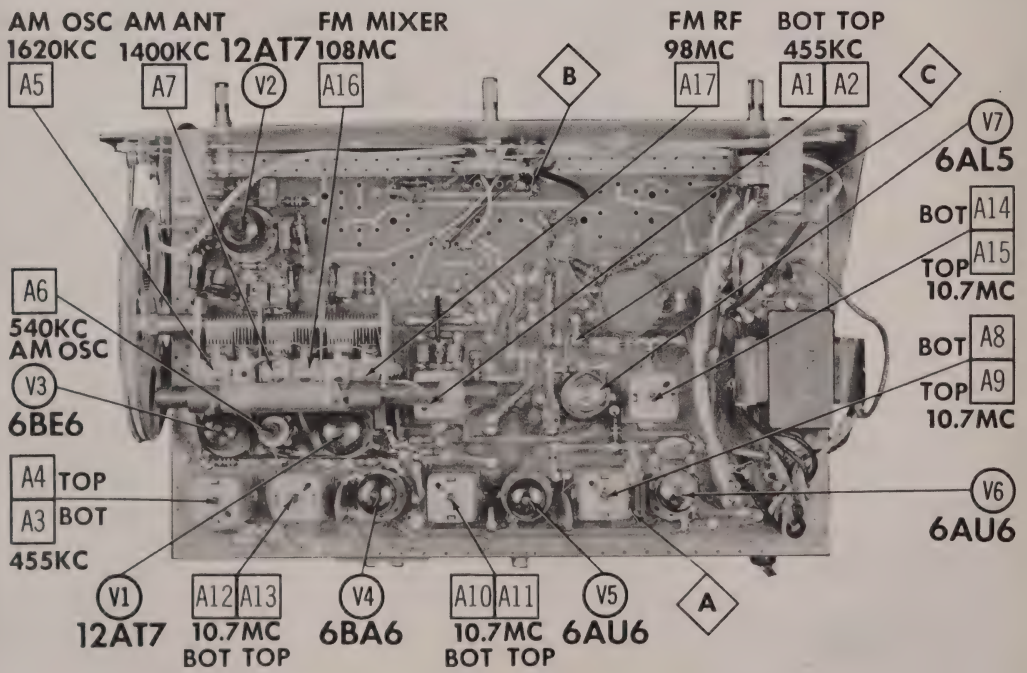


FIG. 2

FOLDER 13



AMP. CHASSIS 343 - TOP VIEW



TUNER CHASSIS TOP VIEW - ALIGNMENT & TUBE IDENT.

AMP CHASSIS 343 PARTS LIST AND DESCRIPTIONS

TUBES

CBS	GENERAL ELECTRIC	RAYTHEON	SYLVANIA

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V8	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7	V9 V10	Channel 1 Output Channel 2 Output	6AQ5 6AQ5

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA SONIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	117V @ .5A	460 VCT @ .080A	6.3 VCT @ 1.2A	PT-343						

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C43A	▲40	300	CE-442		D0020 ‡	PFP397.7		PCLS-3580.4*	
B	■40	250							
C	▲20	250							
C44	15	12	①	SRE50V15	NLW15-25	TT25X15	ML15-25	TE-1129	
C45	15	12	①	SRE50V15	NLW15-25	TT25X15	ML15-25	TE-1129	

① Some versions may use 20mfd @ 25V in this application.
‡ Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SONIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	5500Ω	6-8Ω	OT-343	22S87①	A-2900①	AU-608①	A-3856①	22S87①	S-51X①	① Drill New Mounting Holes
T4	5500Ω	6-8Ω	OT-343	22S87①	A-2900①	AU-608①	A-3856①	22S87①	S-51X①	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA SONIC PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M5	.038A	①SR-65	①1234AH	① T065	①65A	② SR200	① Selenium Type
M6	.038A	①SR-65	① 1234AH	① T065	①65A	② SR200	② Silicon Type

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C46	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C47	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C48	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C49	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C50	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C51	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C52	.1 200V		P288N-2	DF-104	CUB4P1	2DP-3-104	GEM-201	4TM-P1
C53	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C54	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	2TM-S5

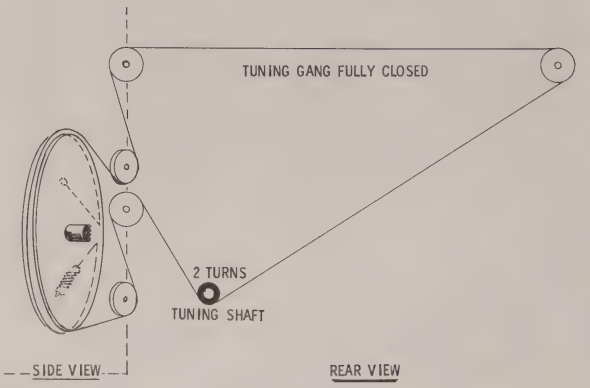
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R32	3meg		VC-341					Volume, Channel 1
R33	10K		TC-341					Tone, Channel 1
R34	3meg		VC-341					Volume, Channel 2
R35	10K		TC-341					Tone, Channel 2

DIAL CORD STRINGING



RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

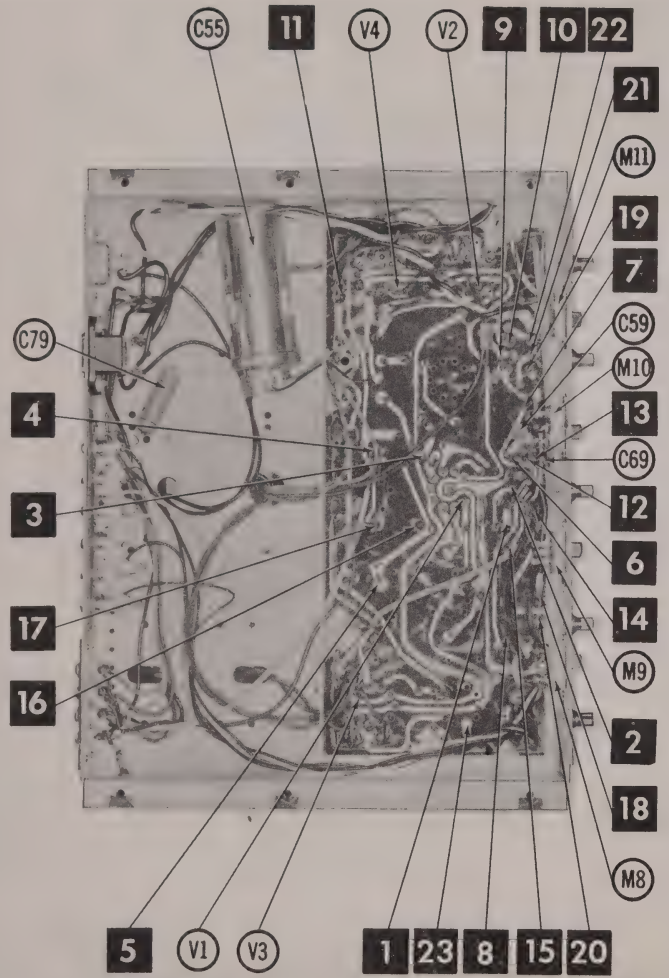
ITEM No.	RATING	REMARKS
R36	6.8meg	
R37	220K	
R38	18K	
R39	3000Ω	(4700Ω) *
R40	470K	

ITEM No.	RATING	REMARKS
R41	220Ω 1W	
R42	6.8meg	
R43	220K	
R44	3000Ω	(4700Ω) *
R45	18K	

ITEM No.	RATING	REMARKS
R46	470K	
R47	220Ω 1W	
R48	250Ω 5W	
R49	10K	(4700Ω 1W) *

* Alternate

SONIC MODELS S-100, S-200, 19C, 1020, 1021, 2011, 2020, 2021 (Ch. 19, 343, 344)
FOLDER 13



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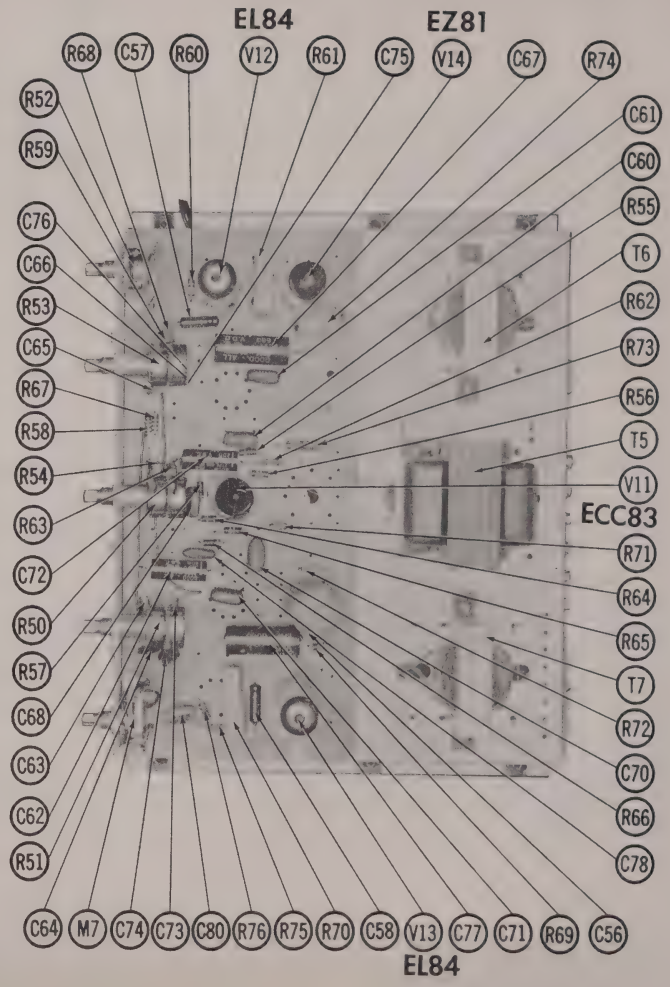
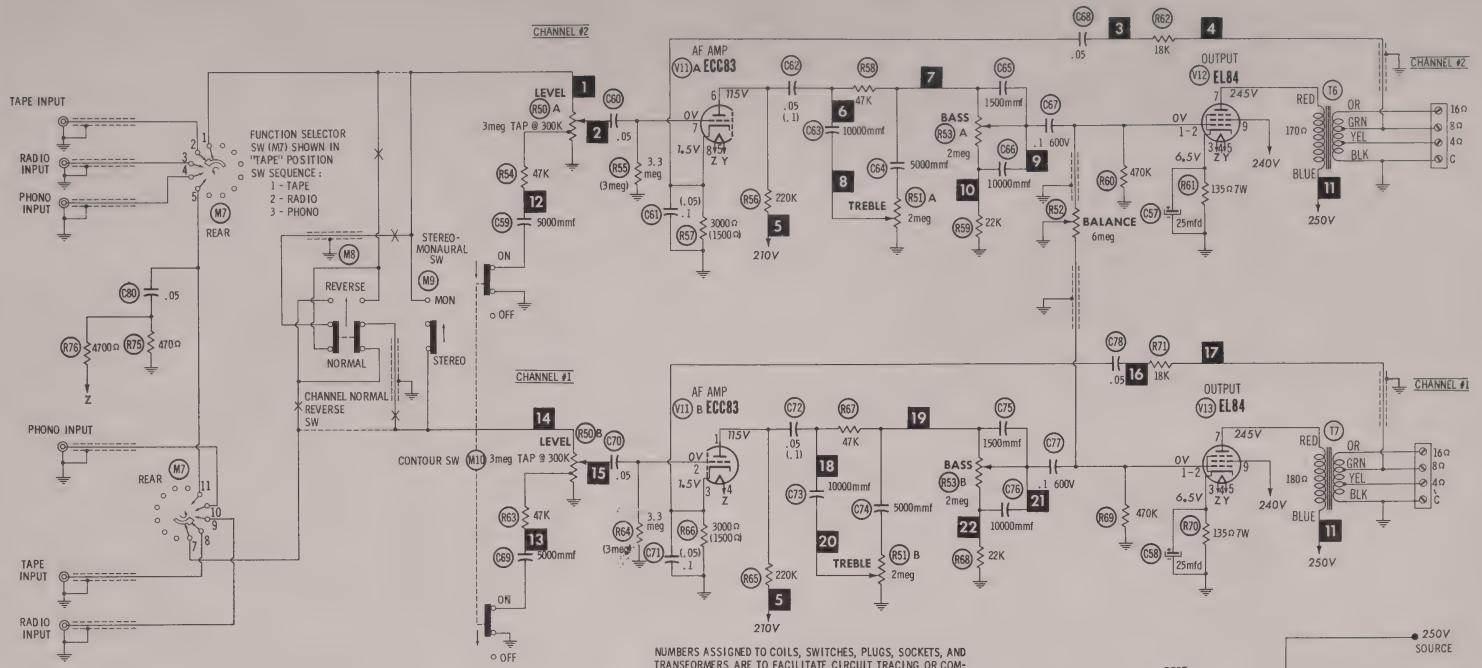
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

AMP. CHASSIS 344 — PRINTED BOARD



AMP. CHASSIS 344 — TOP VIEW



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83	†250K	3meg	3000Ω	.1Ω	.1Ω	†250K	3meg	3000Ω	.1Ω
V2	EL84	370K	370K	135Ω	.1Ω	.1Ω	NC	†420Ω	NC	†1450Ω
V3	EL84	370K	370K	135Ω	.1Ω	.1Ω	NC	†430Ω	NC	†1450Ω
V4	EZ81	140Ω	NC	¶	.1Ω	.1Ω	NC	135Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V4.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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AMP. CHASSIS 344 — SCHEMATIC

SONIC MODELS S-100, S-200, 19C, 1020, 1021
2011, 2020, 2021 (Chassis 19, 343, 344)

AMP CHASSIS 344 PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V11	Channel 1 AF Amp. Channel 2 AF Amp.	ECC83/12AX7	V13	Channel 2 Output	EL84/6BQ5
V12	Channel 1 Output	EL84/6BQ5	V14	Rectifier	EZ81/6CA4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C55A	▲40	400		AFH2-57	B0450	FP238	TMD-43	TVL-2764	
B	▲40	400							
C56A	15	250		PRS2320	BBRDI6D25	TCD74	TDLD-18	TVA-2515	
B	15	250							
C57	25	10		XPP-10025	NLW25-10	TT10X25	TD-25-25	TE-1118	
C58	25	10		XPP-10025	NLW25-10	TT10X25	TD-25-25	TE-1118	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C59	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C60	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C61	.1 200V	*(.05mfd-200V)	P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C62	.05 400V	*(.1mfd-400V)	P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C63	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C64	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C65	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C66	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C67	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C68	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C69	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C70	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C71	.1 200V	*(.05mfd-200V)	P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C72	.05 400V	*(.1mfd-400V)	P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C73	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C74	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C75	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C76	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C77	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C78	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C79	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C80	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R50A	3meg		VC-345A	BT-180 *				Level, Channel 2
B	3meg			STR-180 *				Level, Channel 1
R51A	2meg		TC-345A	B-75	AD47-2meg-S	Q11-139		Treble, Channel 2
B	2meg			SR-75	Not Req.	M11-139	■	Treble, Channel 1
C	Shaft			Not Req.	KSS-3	Not Req.		
R52A	6meg		BC-345A	B-89	A47-7.5meg-S	Q11-142		Balance
B	Shaft			Not Req.	KSS-3	Not Req.		
R53A	2meg		TC-345A	B-75	A47-2meg-S	Q11-139		Bass, Channel 2
B	2meg			SR-75	Not Req.	M11-139	■	Bass, Channel 1
C	Shaft			Not Req.	KSS-3	Not Req.		

* Do not use 1.5meg tap.

■ "STA-LOC" equivalent: FA26L, RU26L, CS3500.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R54	47K	
R55	3.3meg	(3meg) *
R56	220K	
R57	3000Ω	(1500Ω) *
R58	47K	
R59	22K	
R60	470K	
R61	135Ω 7W	

ITEM No.	RATING	REMARKS
R62	18K	
R63	47K	
R64	3.3meg	(3meg) *
R65	220K	
R66	3000Ω	(1500Ω) *
R67	47K	
R68	22K	
R69	470K	

ITEM No.	RATING	REMARKS
R70	135Ω 7W	
R71	18K	
R72	27K	
R73	1200Ω 1W	
R74	250Ω 5W	
R75	470Ω	
R76	4700Ω	

* Alternate Value.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA SONIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T5	117V ⓐ .68A	520 VCT ⓐ .100A	6.3VCT ⓐ 2.8A	PT344	26R31U			PC8405 ①	26R31U	

① Tape 5V Winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SONIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	4500Ω	16Ω tap ⓐ 8Ω, 6Ω	TR344L	24S92				24S92	S-5X	
T7	4500Ω	16Ω tap ⓐ 8Ω, 6Ω	TR344S	24S92				24S92	S-5X	

MISCELLANEOUS

ITEM No.	PART NAME	SONIC PART No.	NOTES
M7	Switch	SW345	Selector
M8	Switch		Channel Normal-Reverse (DPDT, Slide Type)
M9	Switch		Stereo-Monaural (SPST, Slide Type)
M10	Switch		Contour Off-On (DPDT, Slide Type)
M11	Switch		Power Off-On (SPST, Slide Type)
	Printed Board	PCB344	

WIRING DATA

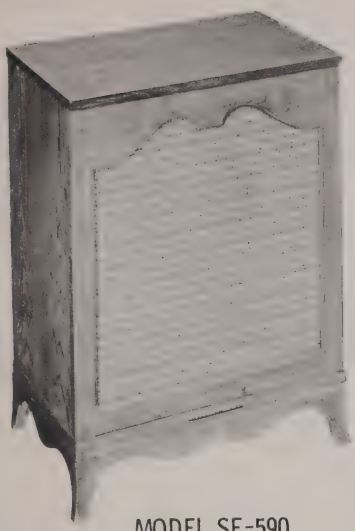
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

STROMBERG-CARLSON MODELS ASR-433, ASR-444, SE-590, SF-682, SF-692, SFR-684, SFR-694, SR-440

STROMBERG-CARLSON MODELS ASR-433, ASR-444, SE-590, SF-682, SF-692, SFR-684, SFR-694, SR-440



MODEL SE-590

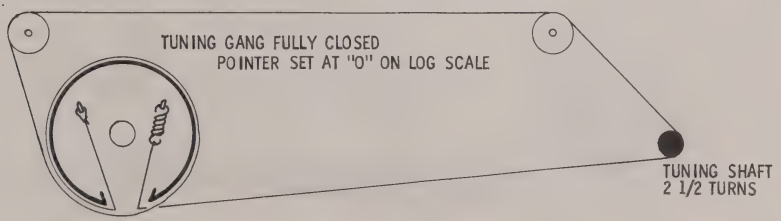
MODEL SFR-694

STROMBERG-CARLSON MODELS ASR-433, ASR-444, SE-590, SF-682, SF-692, SFR-684, SFR-694, SR-440

TRADE NAME	Stromberg-Carlson Models ASR-433, ASR-444, SR-440, SF-682 (ASR-433), SF-692 (ASR-433) SFR-684 (ASR-433, SR-440], SFR-694 (ASR-433, SE-590, SR-440)		
MANUFACTURER	Stromberg-Carlson Co., Special Products Div., 1400 N. Goodman St., Rochester 9, N. Y.		
TYPE SET	AC Operated 13 Tube FM-AM Tuner, 10 Tube Stereo Amplifier And 4 Speed Automatic Record Changer		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	50 Watts, .48 Amp. @117 Volts AC (Tuner) 100 Watts, 1.1 Amp. @117 volts AC (Amp)
TUNING RANGE—BROADCAST	550 — 1620KC	FREQ. MOD.	88 — 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR GLASER-STEERS GS-77 — PHOTOFACT SET 399 FOLDER 7

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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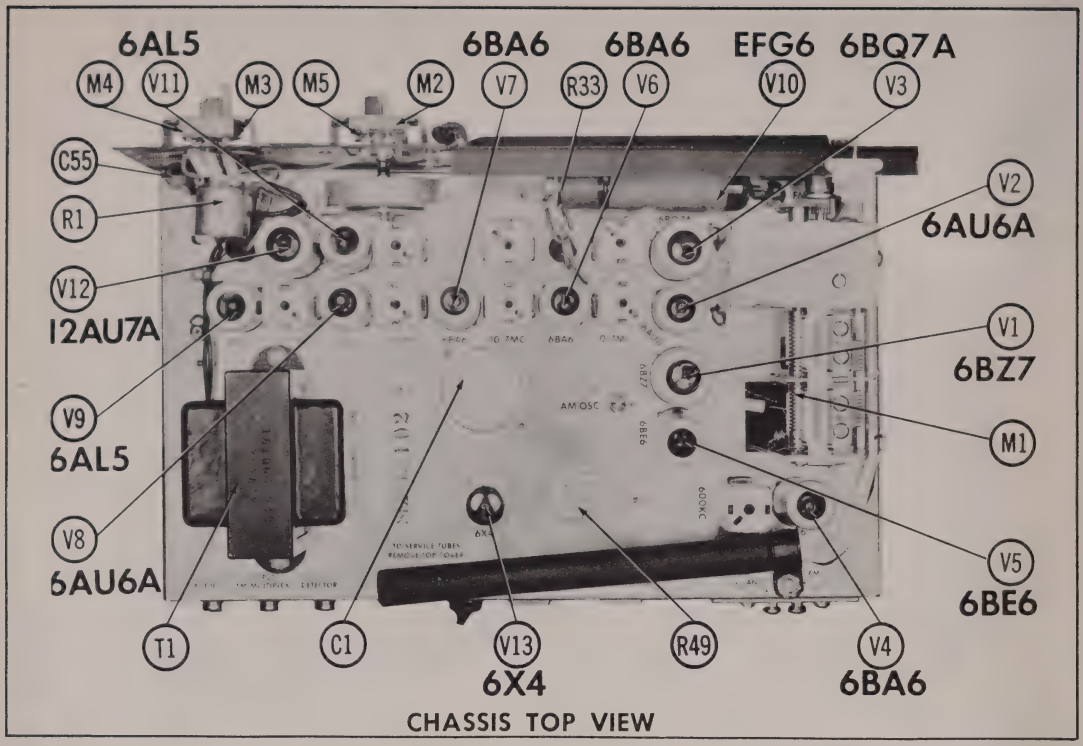
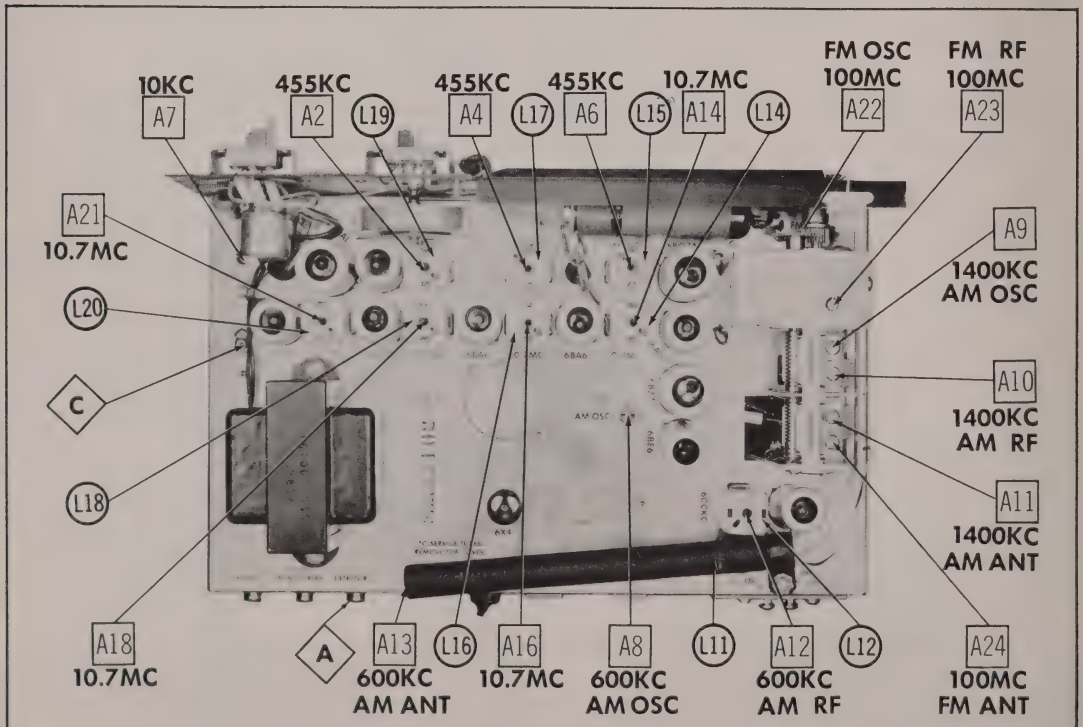


CHASSIS TOP VIEW



CHASSIS TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Set FM-AFC to OFF; LOCAL-DISTANT to DISTANT and AM BROAD-SHARP to SHARP.
Suggested alignment tools:

A1 thru A6, A14 thru A21	GENERAL CEMENT #8606, 8606L, 8282, 9295 WALSCO #2526, 2543, 2544, 2545
A7	GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290 WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A8	GENERAL CEMENT #8721, 8722 WALSCO #2519
A9, A10, A11, A22, A23, A24	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A12	GENERAL CEMENT #5097, 8727 WALSCO #2515

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (Unmod.)	(AM) Point of non-interference near low end of dial.	DC probe to point (A). Common to chassis.	A1, A2, A3, A4, A5, A6	Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection.
2.	High side thru .1mfd to pin 1 (grid) of 2nd IF amp. Low side to chassis.	455KC (10KC Mod.)	"	AC probe to point (A). Common to chassis.	A7	Adjust for MINIMUM deflection.
3.	Across AM antenna terminals with 200mmf in high side.	600KC (Unmod.)	600KC	DC probe to point (A). Common to chassis.	A8	Adjust for maximum deflection.
4.	"	1400KC	1400KC	"	A9, A10, A11	"
5.	"	600KC	600KC	"	A12, A13	Retouch A8 and adjust A12 and A13 for maximum deflection. Repeat steps 3 and 4 until proper tracking is obtained.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	High side thru .1mfd to pin 1 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) 100MC	DC probe thru 10K to point (B). Common to chassis.	A14, A15, A16, A17, A18, A19, A20	Adjust for maximum deflection.
7.	"	"	"	DC probe to point (A). Common to chassis.	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	High side thru .1mfd to pin 1 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) 100MC	Vert. amp. thru 10K to point (B). Low side to chassis.	A14, A15, A16, A17, A18, A19, A20	Disconnect stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
7.	"	"	"	Vert. amp. to point (A). Low side to chassis.	A21	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A20 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	100MC (22.5KC Swp 400Ω Mod.)	(FM) 100MC	DC probe to point (C). Common to chassis.	A22, A23, A24	Adjust for maximum deflection.
9.	Check dial calibration at 108MC, 106MC, 90MC and 88MC as compared to step 8. If difference is excessive, SLIGHTLY compress or expand L7, L5 and L1. Repeat steps 8 and 9 until proper tracking is obtained.					

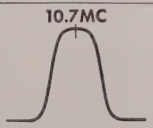


FIG. 1

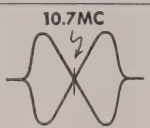


FIG. 2

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier	6BZ7
V2	FM Mixer	6AU6A
V3	FM AFC-Osc.	6BQ7A
V4	AM RF Amplifier	6BA6
V5	AM Converter	6BE6
V6	1st FM-AM IF Amp.	6BA6
V7	2nd FM-AM IF Amp.	6BA6
V8	3rd FM IF Amp. -AM Det. -AVC	6AU6A
V9	FM Limiter	6AL5
V10	Tuning Indicator	EFG6/EM84
V11	Ratio Detector	6AL5
V12	AF Amp-Cath. Follower	12AU7A
V13	Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	250	111625-000	AFH4-02-10	D0022	FP419.5	TMQ-116	TVL-4580	
B	■30	250							
C	40	200							
D	▲40	200							
C2	5	50	111093-000	PRS1310	BBR5-50	TC30	TD-5-50	TVA-1303	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	47 10%		NPO-SI 47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C4	100 NPO		NPO-SI 100	TCZ-100	C10T1C	CCTO-101	CNO-310	10TCC-T10
C5	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C6	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C7	10 NPO 10%		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C8	330 10%			DD-331	L10T33	CCD-331	GP333	10TS-T33
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C10	100		SI 100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C11	3-12							
C12	10 N750 10%		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C13	10 NPO 10%		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CN7-410	10TCC-Q10
C14	27		SI 27	DD-270	L10Q27	CCD-270	GP327	10TS-Q27
C15	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C16	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C17	1000		EF-001	MFT-1000		CCF-102	CT280A	
C18	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C19	1000		EF-001	MFT-1000		CCF-102	CT280A	
C20	1000		EF-001	MFT-1000		CCF-102	CT280A	
C21	100 N150					*		10TCP-T10
C22	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C23	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C25	1.0		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C28	100 NPO		NPO-SI 100	TCZ-100	C10T1C	CCTO-101	CNO-310	10TCC-T10
C29	10 N750 10%		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C33	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C36	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C37	100 N150					*		10TCP-T10
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C39	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C40	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C41	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C42	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C43	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C45	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C46	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C47	1000		EF-001	MFT-1000		CCF-102	CT280A	
C48	30-270					464		
C49	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C50	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C51	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S2
C52	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C53	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C54	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C55	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C56	10000		BPD-01	DD-103	BYA10S1	CCD-102	GP110	5HK-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	145000-061		C47S-1meg-Z		PP16A	Gain
B	Switch				Not Req.		Not Req.	Push-Pull-Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	68Ω	
R3	10K 1W	
R4	100K	
R5	2200Ω	
R6	5600Ω	
R7	100Ω	
R8	1000Ω	
R9	470K	
R10	1000Ω	
R11	220Ω	
R12	8200Ω	
R13	2.2meg	
R14	680K	
R15	22K	
R16	10K 1W	
R17	1meg	
R18	1000Ω	

ITEM No.	RATING	REMARKS
R19	68Ω	
R20	1000Ω	
R21	68Ω	
R22	220K	
R23	470K	
R24	470K	
R25	1000Ω	
R26	68Ω	
R27	100K	
R28	2.2meg	
R29	1.5meg	
R30	1.5meg	
R31	1meg	
R32	470K	
R33	470K	
R34	68Ω	
R35	68K	

ITEM No.	RATING	REMARKS
R36	10K 5%	
R37	2200Ω	
R38	10K 5%	
R39	100K	
R40	470K	
R41	100K	
R42	560Ω	
R43	470K	
R44	1000Ω	
R45	10K	
R46	1000Ω	
R47	330Ω 2W	
R48	1000Ω	
R49	1100Ω 50W	
B	330Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Stromberg-Carlson PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil	114000-101						
L2	RF Choke	114193-000	19-1001	19-1001		4604	VP-9	1.7uh
L3	RF Choke	114693-000	19-1002	19-1002	BC-563	4606		2.2uh ①
L4	RF Choke	114693-000	19-1002	19-1002	BC-563	4606		2.2uh ①

TUNER PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Stromberg-Carlson PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L5	FM RF Coil	114000-101						
L6	Cathode Choke	114707-000			BC-560	4588		.47uh ①
L7	FM Osc. Coil	114000-102						
L8	RF Choke	114693-000	19-1002	19-1002	BC-563	4606		2.2uh ①
L9	RF Choke	114707-000			BC-560	4588		.47uh ①
L10	AM Ant. Coil	114165-000			BC-549	6302		2.5uh
L11	Loopstick	139000-001			BC-419			
L12	AM RF Trans.	114164-000	14-1411	14-1411				
L13	AM Osc. Coil	114000-079						
L14	1st FM IF	114363-000	16-3487	16-3487	FM-254	1463		
L15	1st AM IF	114469-000						
L16	2nd FM IF	114363-000	16-3487	16-3487	FM-254	1463		
L17	2nd AM IF	114469-000						
L18	3rd FM IF	114363-000	16-3487	16-3487	FM-254	1463		
L19	3rd AM IF	114468-000	16-6758	16-6758	BC-353	12-C2	RF-2	
L20	Ratio Detector	114467-000	17-3498	17-3498	FM-255	1465		
L21	10KC Filter	114000-151						1Hy.

① IRC Part #CLA.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .48A	480 VCT ⓐ .050A	6.3V ⓐ 4.6A	161000-035						

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Stromberg-Carlson PART No.	REPLACEMENT DATA	
K1	AM Audio Filter	150mmf, 150mmf, 47K	110478-000	Aerovox Centralab Cornell-Dubilier Sprague	PA-98 PC-51 111TM2 D-2

MISCELLANEOUS

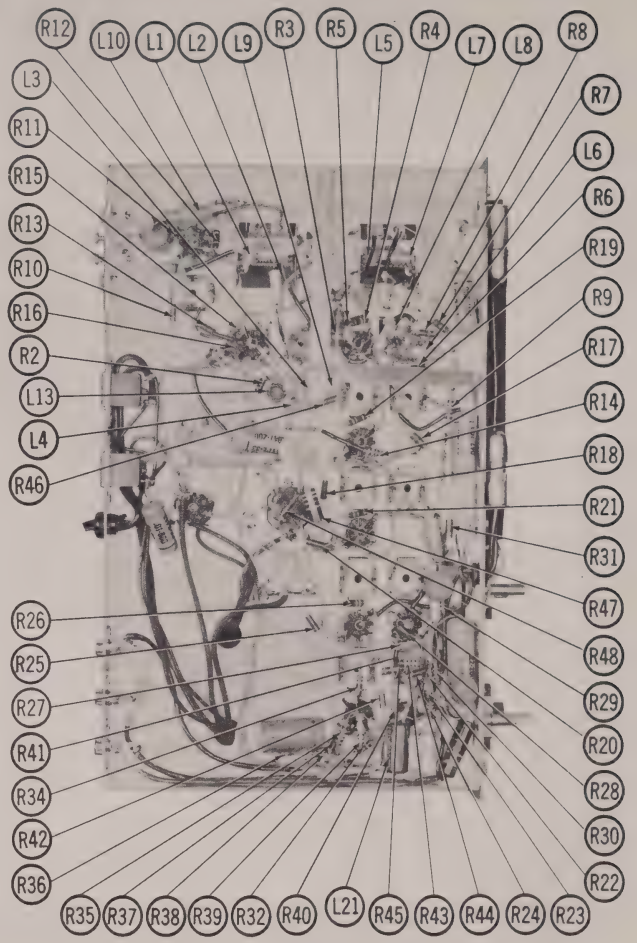
ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M1	Tuning Cap.	110000-029	5 Gang (AM Sections: Ant. 21—410mmf, RF 10—307mmf, Osc. 8—112mmf)
M2	Switch	158000-055	Local-Distant (SPDT, Slide Type)
M3	Switch	158000-055	AFC Off-On (SPDT, Slide Type)
M4	Switch	158000-059	FM-AM (DPDT, Slide Type)
M5	Switch	158000-058	Broad-Sharp (DPDT, Slide Type)

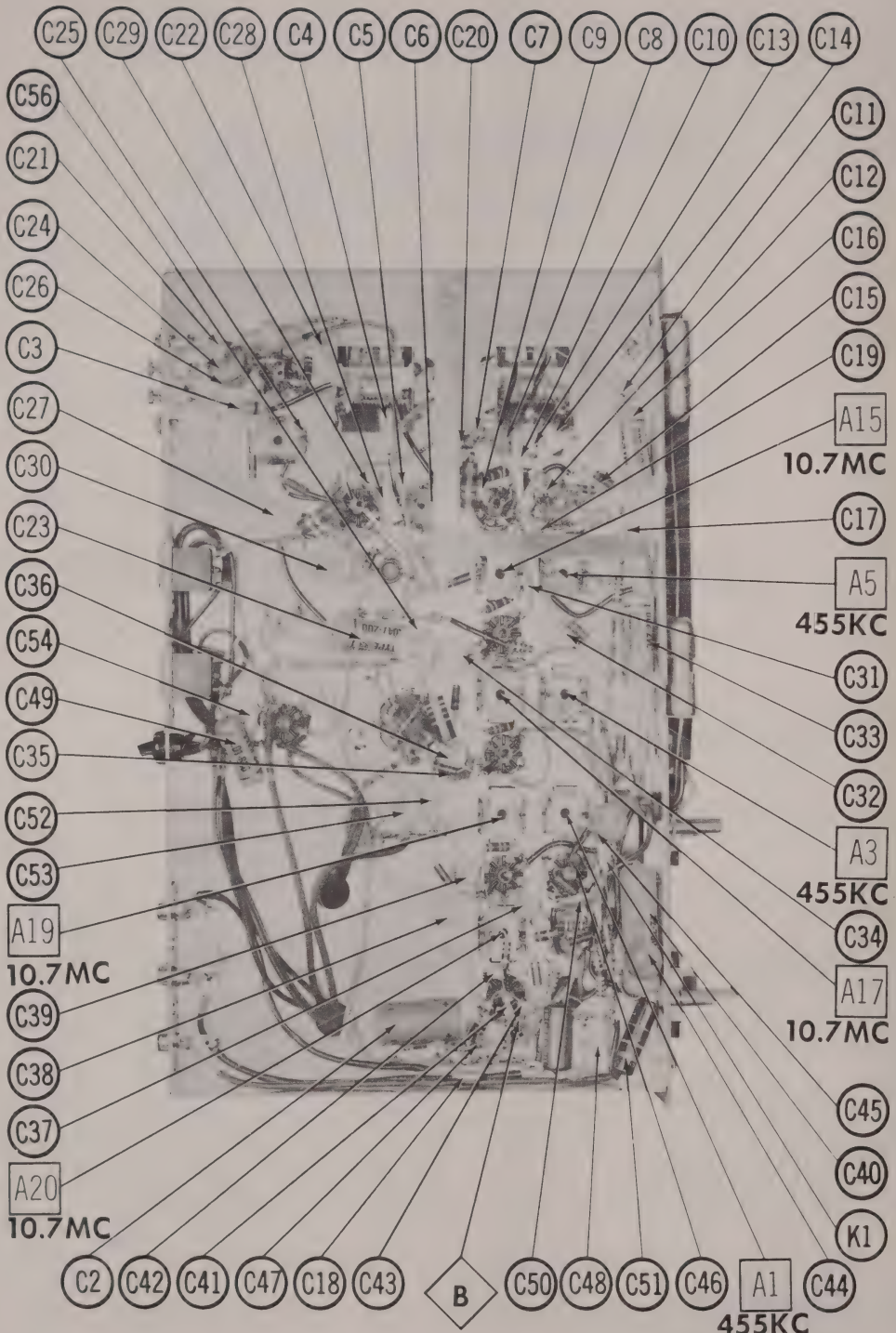
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

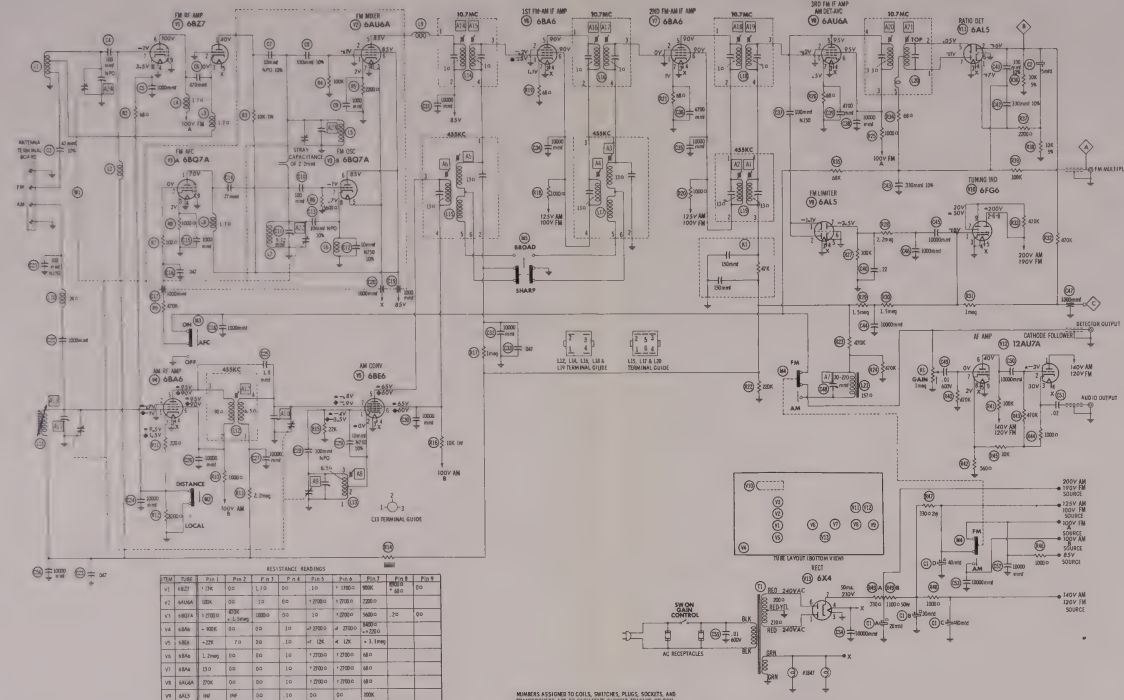
NAME	PART NO.	DESCRIPTION
Knob	142000-033	Plain
Knob	142000-032	With Pointer
Dial Glass	142000-011	
Dial Pointer	142000-005	

TUNER CHASSIS—BOTTOM VIEW





CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	1A2T	4.7M	0.0	1,170	0.0	1.0	+ 270.0	450Ω	68.0	0.0
V2	6AU6A	100K	0.0	2.0	0.0	+ 270.0	+ 270.0	220.0		
V3	6BQ7A	1.210Ω	470K + 1.5 meg	1000Ω	0.0	1.0	+ 270.0	560.0	.270	0.0
V4	6BA6	+ 100K	0.0	0.0	1.0	+ 270.0	4 270.0	560Ω + 220.0		
V5	6BE6	+ 22K	7.0	0.0	1.0	+ 12K	4 12K	+ 1 meg		
V6	6BA6	1.2meg	0.0	0.0	1.0	+ 270.0	+ 270.0	68.0		
V7	6BA6	13.0	0.0	0.0	1.0	+ 270.0	+ 270.0	68.0		
V8	6AU6A	270K	0.0	0.0	1.0	+ 270.0	+ 270.0	68.0		
V9	6AL5	INF	INF	0.0	1.0	0.0	0.0	100K		
V10	6FG6 TRIM	1.4meg	1.13Ω	0.0	0.0	1.0	+ 130.0	+ 470K	1.52Ω	1.47K
V11	6AL5	12K	20K	0.0	1.0	1meg	0.0	1meg		
V12	12AU7A	1.2MΩ	68K	11K	1.0	1.0	+ 100K	470K	560Ω	0.0
V13	6X4	220Ω	NC	0.0	1.0	NC	220Ω	1		

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
* ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED FROM PIN 7 OF V12.
* MEASURED IN "AM" POSITION.
* MEASURED IN DETENT POSITION.
* MEASURED WITH AFC SWITCH IN "ON" POSITION.

DC OHM RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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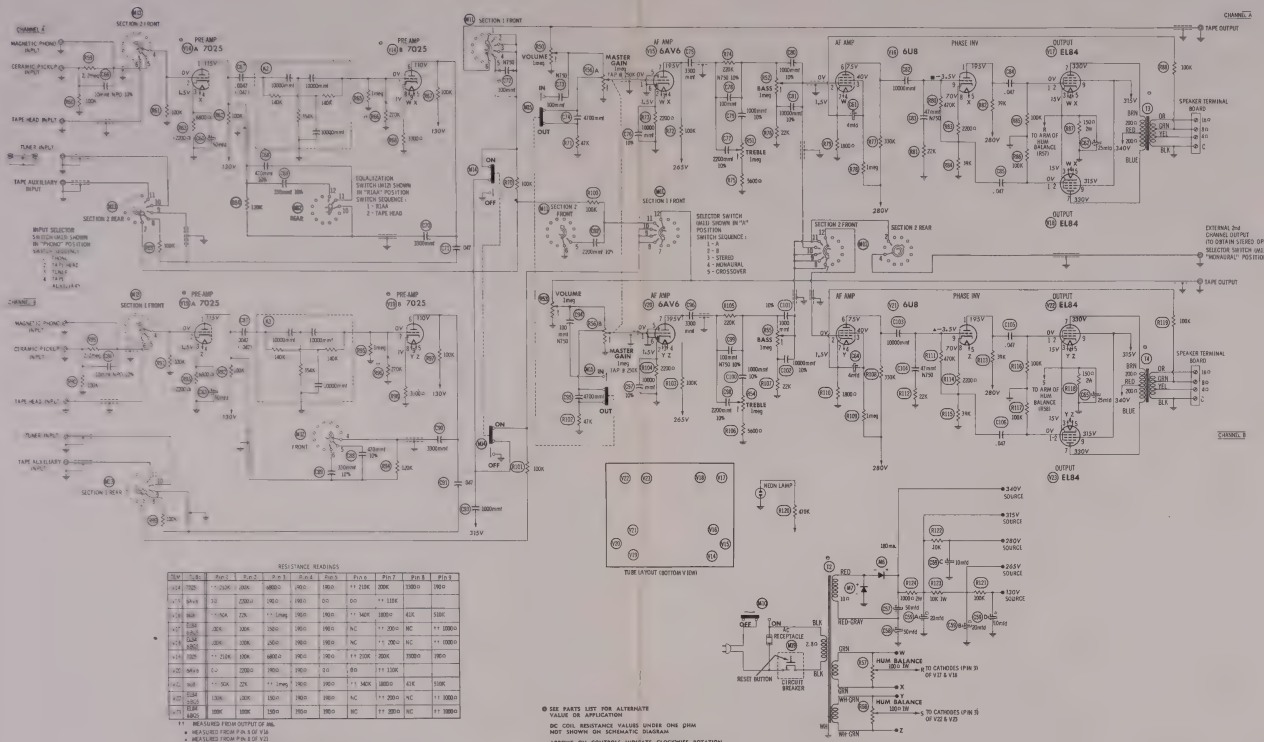
STROMBERG-CARLSON MODELS ASR-433, ASR-444, SE-590, SF-682, SF-692, SFR-684, SFR-694, SR-440



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1-A	7025	** 210K	200K	680Ω	190Ω	190Ω	** 210K	200K	1500Ω	190Ω
V1-B	7025	** 190K	72K	** 1meg	190Ω	190Ω	** 340K	1800Ω	410K	510K
V2	6AV6	200K	330K	250Ω	190Ω	190Ω	NC	** 200Ω	NC	** 1000Ω
V3	6U8	200K	330K	250Ω	190Ω	190Ω	NC	** 200Ω	NC	** 1000Ω
V4	EL84	** 210K	100K	680Ω	190Ω	190Ω	** 210K	200K	1500Ω	190Ω
V22	6AV6	0	220Ω	190Ω	190Ω	0	0	** 110K		
V23	6U8	** 90K	72K	** 1meg	190Ω	190Ω	** 340K	1800Ω	410K	510K
V27	EL84	130K	220K	150Ω	190Ω	190Ω	NC	** 200Ω	NC	** 1000Ω
V28	EL84	100K	100K	150Ω	190Ω	190Ω	NC	** 200Ω	NC	** 1000Ω

** MEASURED FROM OUTPUT OF 2ML
▲ MEASURED FROM P.N. 9 OF V1A
▲ MEASURED FROM P.N. 8 OF V1B

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage has fluctuated at 117 volts for voltage readings
5. Normal tolerance of component values makes possible a variation of ±5% in voltage and resistance readings
6. All controls at minimum, proper output load connected

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

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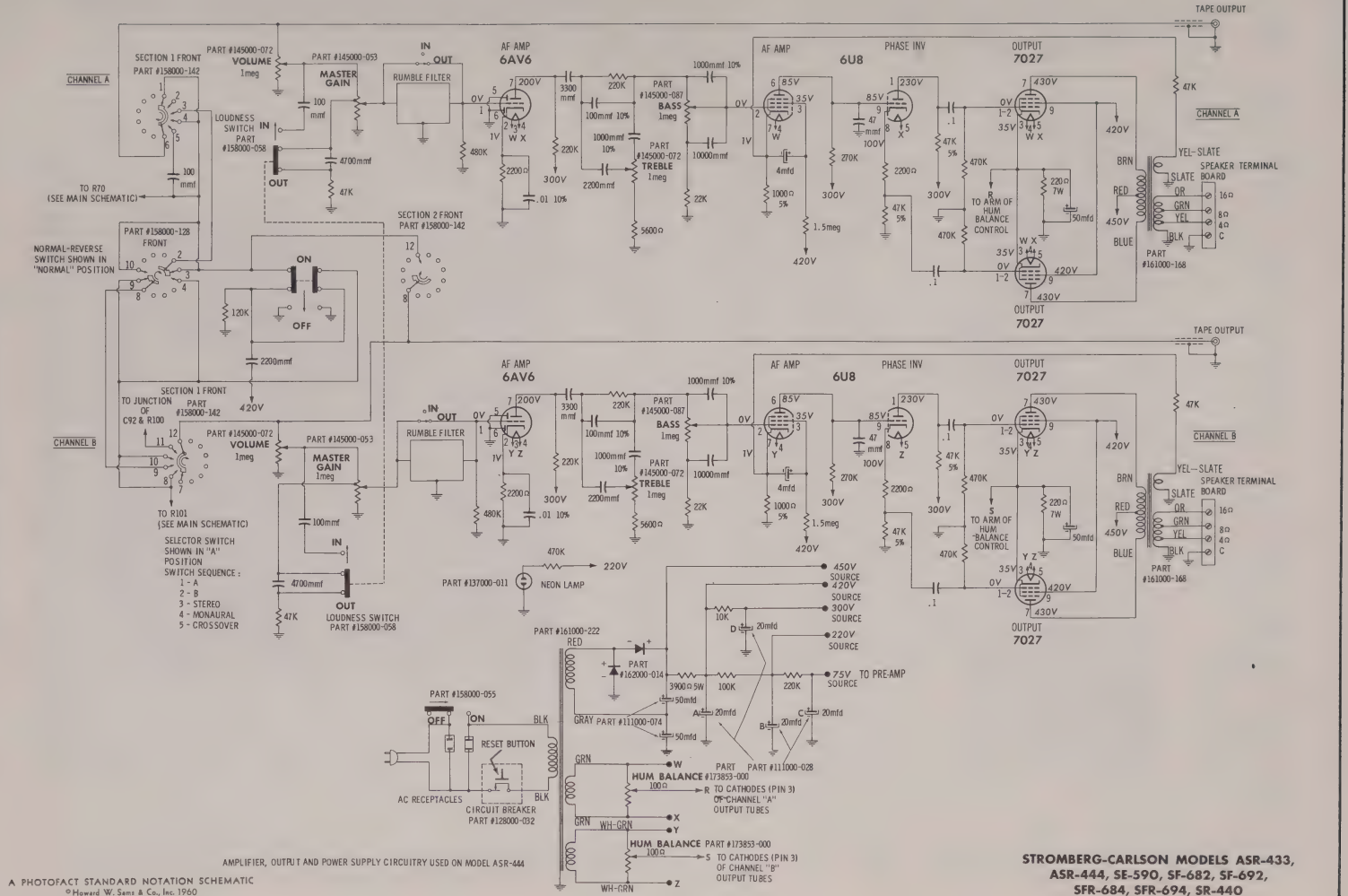
STROMBERG-CARLSON MODELS ASR-433, ASR-444, SE-590, SF-682, SF-692, SFR-684, SFR-694, SR-440

AMP SCHEMATIC



AMPLIFIER, OUTPUT AND POWER SUPPLY CIRCUITRY USED ON MODEL ASR-444

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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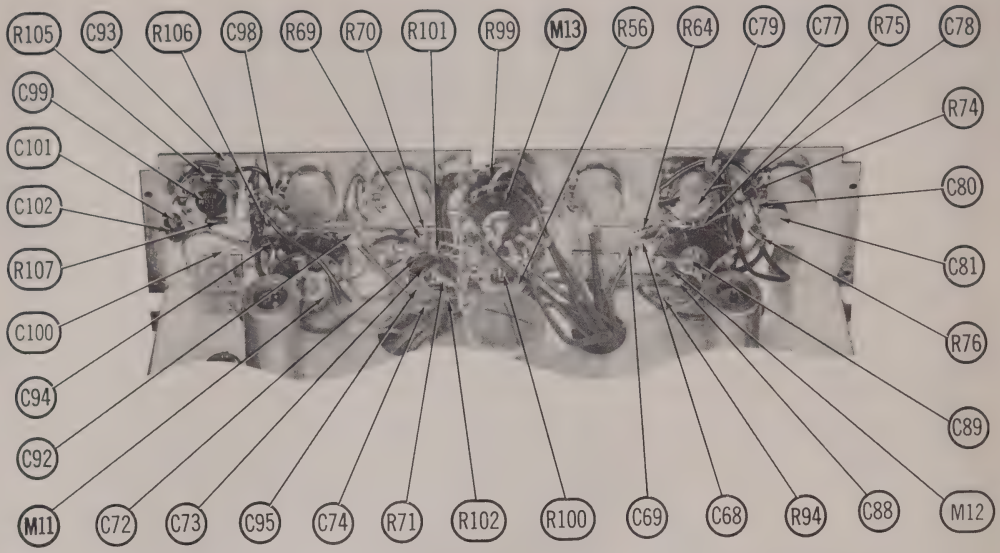
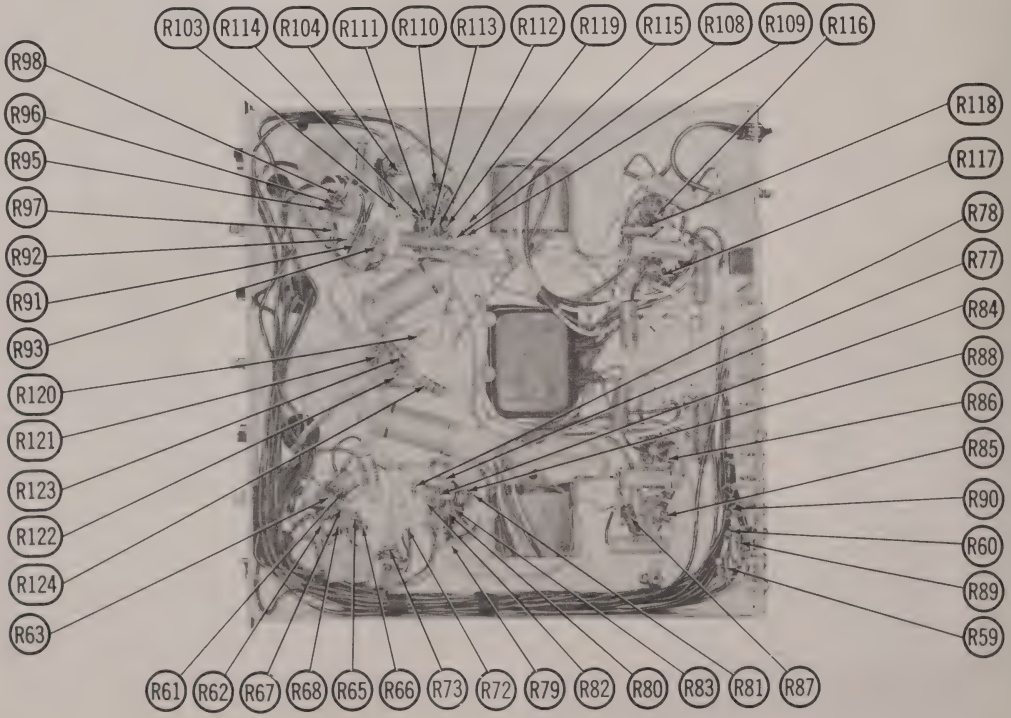
STROMBERG-CARLSON MODELS ASR-433, ASR-444, SE-590, SF-682, SF-692, SFR-684, SFR-694, SR-440

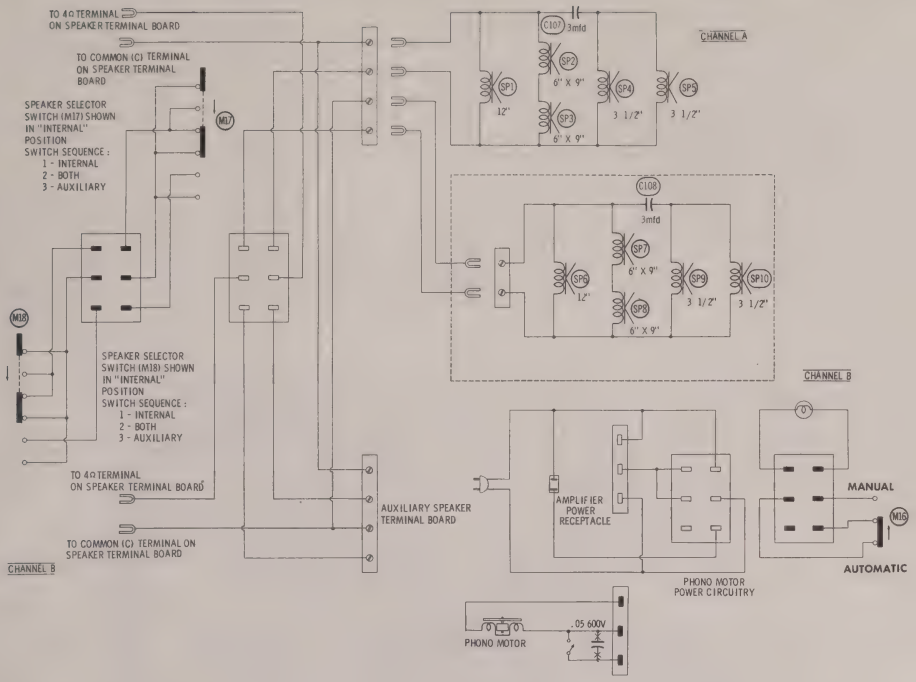
STROMBERG-CARLSON
MODELS ASR-433



AMP CHASSIS CONTROL PANEL — REAR VIEW



AMP CHASSIS BOTTOM VIEW — RESISTOR IDENT.



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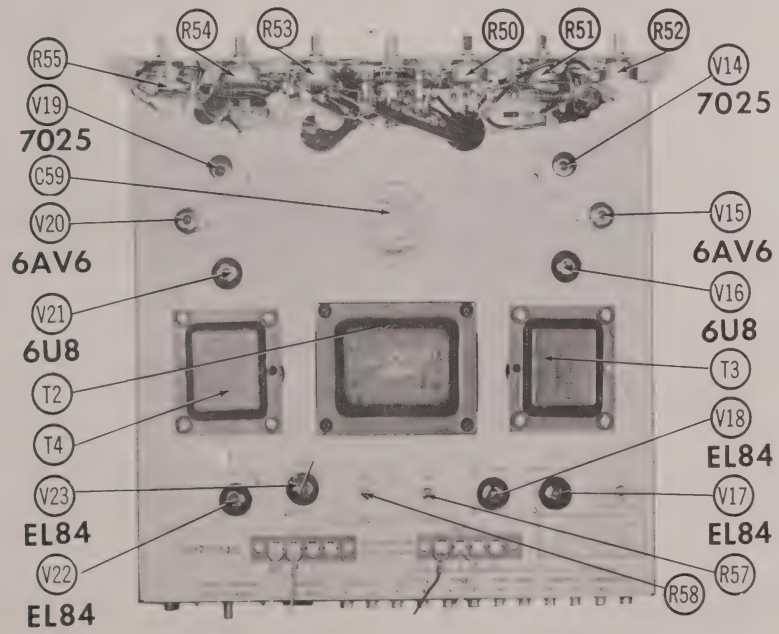
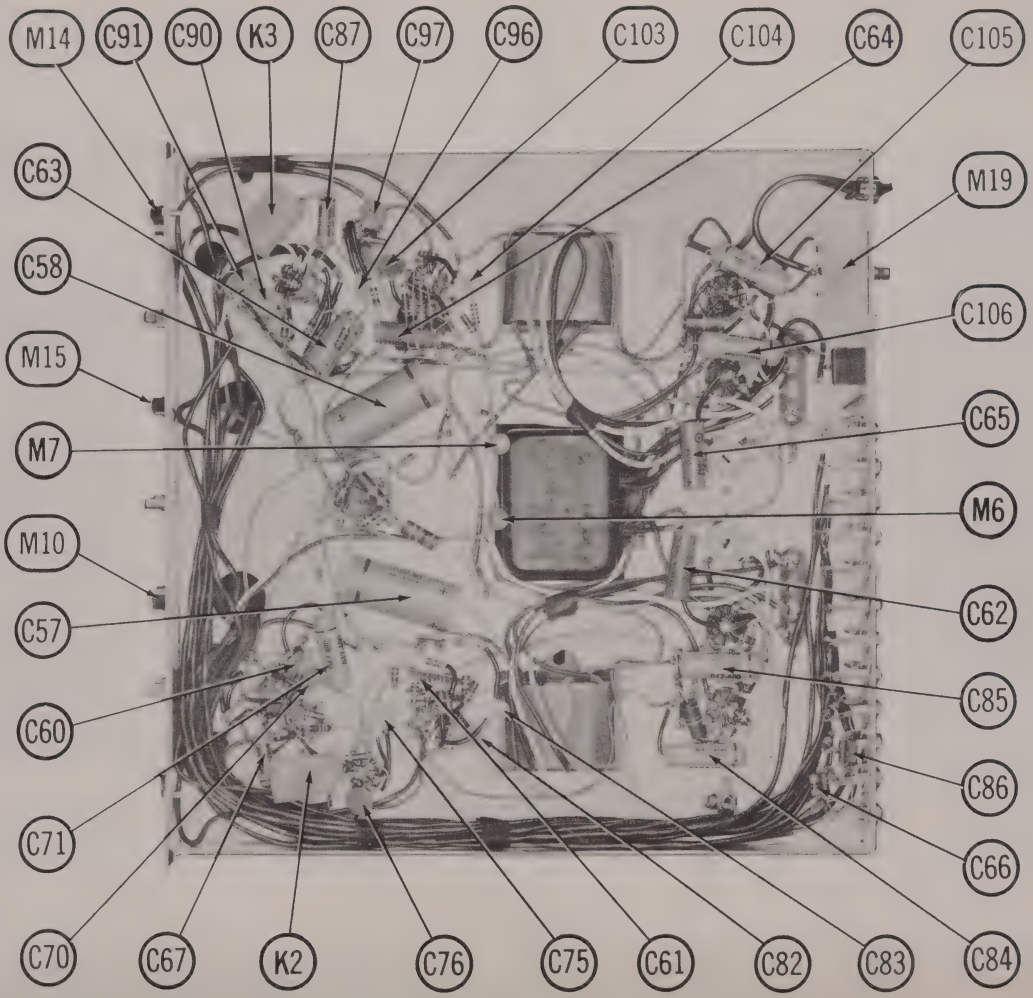
SPEAKER & PHONO POWER CONNECTIONS



AMP CHASSIS — TOP VIEW



AMP CHASSIS BOTTOM VIEW — CAPACITOR & MISC. IDENT.

AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ CBS ◆ GENERAL ELECTRIC)	ITEM No.	USE	TYPE (◆ RAYTHEON ◆ SYLVANIA ◆)
V14	Channel A Preamp.	7025 (12AX7) *	V19	Channel B Preamp.	7025 (12AX7) *
V15	Channel A AF Amp.	6AV6	V20	Channel B AF Amp.	6AV6
V16	Channel A AF Amp. - Phase Inv.	6U8	V21	Channel B AF Amp. - Phase Inv.	6U8
V17	Channel A Output	EL84/6BQ5	V22	Channel B Output	EL84/6BQ5①
V18	Channel A Output	EL84/6BQ5	V23	Channel B Output	EL84/6BQ5①

* Alternate
① Model ASR-444 uses 7027 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C57	50	200	111000-049	PRS1585	BR5025	TC59	TD-50-450	TVA-1713	Note 1
C58	50	200	111000-049	PRS1585	BR5025	TC59	TD-50-450	TVA-1713	Note 1
C59A	■20	450	111000-040	AFH4-19-10	D0179.3	FP474.5	TMQ-12	TVL-4832	Note 2
B	▲20	450							Note 2
C	10	400							Note 2
D	▲10	400							Note 2
C60	50	6	111615	PRS1265	BBR50-6	TT6X50	TD-50-6	TVA-1100	
C61	4	150	111000-050	PRS1400	BBR4-150	TT150X4	TD-4-150	TVA-1402	
C62	25	25	111000-009	PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	
C63	50	6	111615	PRS1265	BBR50-6	TT6X50	TD-50-6	TVA-1100	
C64	4	150	111000-050	PRS1400	BBR4-150	TT150X4	TD-4-150	TVA-1402	
C65	25	25	111000-009	PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	

Note 1. Model ASR-444 uses 250V unit in this application (Part #111000-074).
Note 2. In Model ASR-444 , C59C, and C59D 20mfd@450V (C59 Part #111000-028).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C66	10 NPO 10%		NPO-SI 10	TCZ-10	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C67	.0047 400V	(.047mfd) ◆	P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C68	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C69	330 10%		DI-330	DD-331	LI0T33	CCD-331	GP333	10TS-T33
C70	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33
C71	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C72	100 N750	Note 1	N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C73	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C74	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C75	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33
C76	10000 10%		DI-10000		PM6SI	CCD-103	GEM-1611	10TS-S10
C77	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C78	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C79	1000 10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10
C80	1000 10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10
C81	10000 10%		DI-10000		PM6SI	CCD-103	GEM-1611	10TS-S10
C82	10000	Note 2	BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C83	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C84	.047 400V	Note 4	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C85	.047 400V	Note 4	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C86	10 NPO 10%		NPO-SI 10	TCZ-10	C10QIC	CCTO-100	CNO-410	10TCC-Q10
C87	.0047 400V	(.047mfd) ◆	P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C88	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C89	330 10%		DI-330	DD-331	LI0T33	CCD-331	GP333	10TS-T33
C90	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33
C91	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C92	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C93	1000	Note 3	BPD-001	DD-102	BYA10DI	CCD-102	GP210	5HK-D10
C94	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C95	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C96	3300		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33
C97	10000 10%		DI-10000		PM6SI	CCD-103	GEM-1611	10TS-S10
C98	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C99	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C100	1000 10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10
C101	1000 10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10
C102	10000 10%		DI-10000		PM6SI	CCD-103	GEM-1611	10TS-S10
C103	10000	Note 2	BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C104	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C105	.047 400V	Note 4	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C106	.047 400V	Note 4	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C107	3mfd 30V		P1589Z-3.0					1183050282
C108	3mfd 30V		P1589Z-3.0					1183050282

◆ Alternate Value.
Note 1. Not used in some versions.
Note 2. Not used in Model ASR-444.
Note 3 Model ASR-444 uses 2200mmf in this application.
Note 4. Model ASR-444 uses .1mfd - 400V in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R50A	1meg		145000-072	B-70	A47-1meg-Z	Q13-137	U53	Volume, Channel A
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R51A	1meg		145000-072	B-70	A47-1meg-Z	Q13-137	U53	Treble, Channel A
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R52A	1meg		145000-072	B-70	A47-1meg-Z	Q13-137	U53	Bass, Channel A
B	Shaft		①	Not Req.	FS-3	Not Req.	Not Req.	
R53A	1meg		145000-072	B-70	A47-1meg-Z	Q13-137	U53	Volume, Channel B
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R54A	1meg		145000-072	B-70	A47-1meg-Z	Q13-137	U53	Treble, Channel B
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R55A	1meg		145000-072	B-70	A47-1meg-Z	Q13-137	U53	Bass, Channel B
B	Shaft		①	Not Req.	FS-3	Not Req.	Not Req.	
R56A	1meg		145000-053				FS16T254	Master Gain, Channel A
	250K Tap							
B	1meg						RU16T254	Master Gain, Channel B
	250K Tap							
C	Shaft						CS3500	
R57A	100Ω	1(WW)	173853-000	WN-101	A43-100	W11-084	FL100P	Hum Balance, Channel A
B	Shaft			Not Req.	FKS 1/4	SK5	Not Req.	
R58A	100Ω	1(WW)	173853-000	WN-101	A43-100	W11-084	FL100P	Hum Balance, Channel B
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	

① Model ASR-444 uses Part #145000-087.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R59	2.2meg	
R60	100K	
R61	100K	
R62	100K	
R63	6800Ω	(2200Ω) *
R64	120K	
R65	1meg	
R66	270K	
R67	100K	
R68	3300Ω	
R69	100K	
R70	100K	
R71	47K	
R72	100K	
R73	2200Ω	
R74	220K	
R75	5600Ω	
R76	22K	
R77	330K	
R78	1meg	
R79	1800Ω	
R80	470K	

ITEM No.	RATING	REMARKS
R81	22K	
R82	39K	
R83	2200Ω	
R84	39K	
R85	100K	
R86	100K	
R87	150Ω 2W	
R88	100K	
R89	2.2meg	
R90	100K	
R91	100K	
R92	100K	
R93	6800Ω	(2200Ω) *
R94	120K	
R95	1meg	
R96	270K	
R97	100K	
R98	3300Ω	
R99	100K	
R100	100K	
R101	100K	
R102	47K	

ITEM No.	RATING	REMARKS
R103	100K	
R104	2200Ω	
R105	220K	
R106	5600Ω	
R107	22K	
R108	330K	
R109	1meg	
R110	1800Ω	
R111	470K	
R112	22K	
R113	39K	
R114	2200Ω	
R115	39K	
R116	100K	
R117	100K	
R118	150Ω 2W	
R119	100K	
R120	470K	
R121	100K	
R122	10K	
R123	10K 1W	
R124	1000Ω 2W	

* Alternate Value.

STROMBERG-CARLSON MODELS ASR-433, ASR-444, SE-590, SF-682, SF-692, SFR-684, SFR-694, SR-440

AMP PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Stromberg-Carlson PART No.	REPLACEMENT DATA
K2	Tone Comp.	(3) 10000mmf, (2) 140K, 354K		
K3	Tone Comp.	(3) 10000mmf, (2) 140K, 354K		

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA: Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
	PRI.	SEC. 1	SEC. 2							
T2	117V Ⓐ 1.1A	130V Ⓐ .570A	6.3V Ⓐ 2.6A	161000-210						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V Ⓐ 2.6A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA: Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC.								
T3	5700Ω	16ΩTap Ⓐ 8Ω, 4Ω	161000-159 ①	22S95 ②				22S95 ②		
T4	5700Ω	16ΩTap Ⓐ 8Ω, 4Ω	161000-159 ①	22S95 ②				22S95 ②		

① Model ASR-444 uses Part #161000-168.
② Use original shields.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA: Stromberg-Carlson PART No.	QUAM PART No.	NOTES
	SIZE	FIELD	V. C. IMP.			
SP1	12"	PM	4-6Ω	155000-029	12A6AZ6	
SP2	6"x 9"	PM	3-4Ω	155000-030	69A3	
SP3	6"x 9"	PM	3-4Ω	155000-030	69A3	
SP4	3½"	PM	10-12Ω	155372	3A15TZ10.6	
SP5	3½"	PM	10-12Ω	155372	3A15TZ10.6	
SP6	12"	PM	4-6Ω	155000-029	12A6Z6	
SP7	6"x 9"	PM	3-4Ω	155000-030	69A3	
SP8	6"x 9"	PM	3-4Ω	155000-030	69A3	
SP9	3½"	PM	10-12Ω	155372	3A15TZ10.6	
SP10	3½"	PM	10-12Ω	155372	3A15TZ10.6	

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: Stromberg-Carlson PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M6	.050A	162000-011 ①	SD500	HA504	40K	SR500	Silicon Type
M7	.050A	162000-011 ①	SD500	HA504	40K	SR500	Silicon Type

① Part #162000-014 used in Model ASR-444.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: Stromberg-Carlson PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M8				31-M				8TA4-S	N-8TAS

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: Stromberg-Carlson PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M9				

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M10	Switch	158000-055	Power Off-On (SPDT Slide Type)
M11	Switch	158000-126	Function Selector (Rotary Wafer Type) Model ASR-433
	Switch	158000-121	Function Selector, Model ASR-444
M12	Switch	158000-128	Equalization (Rotary, Wafer Type) Model ASR-433
	Switch	158000-128	Channel Reverse Model ASR-444
M13	Switch	158000-127	Input Selector (Rotary, Wafer Type) Model ASR-433
	Switch	158000-142	Input Selector Model ASR-444
M14	Switch	158000-058	Output Balance (DPDT, Slide Type)
M15	Switch	158000-058	Loudness (DPDT, Slide Type)
M16	Switch	158000-055	Auto-Manual Phono Power (SPDT, Slide Type)
M17	Switch		Speaker (A) (DPTT, Slide Type)
M18	Switch		Speaker (B) (DPTT, Slide Type)
M19	Circuit Breaker	128000-032	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knobs	134000-032	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

TRUETONE MODELS 4DC5936A, 4DC5937A, 4DC5938A

TRUETONE MODELS
4DC5936A, 4DC5937A, 4DC5938A

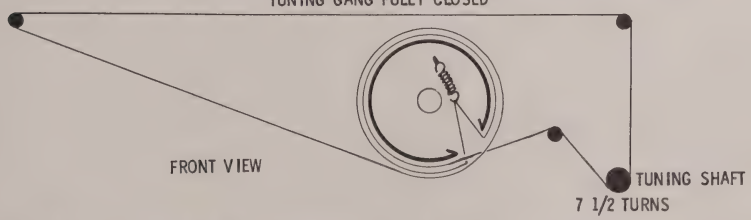
MODEL 4DC5936A

TRUETONE MODELS
4DC5936A, 4DC5937A, 4DC5938A

TRADE NAME	Truetone Models 4DC5936A, 4DC5937A, 4DC5938A		
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City 8, Mo.		
TYPE SET	AC Operated 12 Tube FM-AM Receiver With Stereo Output And 4 Speed Automatic Record Changer		
POWER SUPPLY	105 - 125 Volts AC, 60 Cycles	RATING	100 Watts, .9 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	535 - 1620KC	FREQ. MOD.	88 - 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE GLASER - STEERS GS-77 — PHOTOFACT SET 399 FOLDER 7

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JN685

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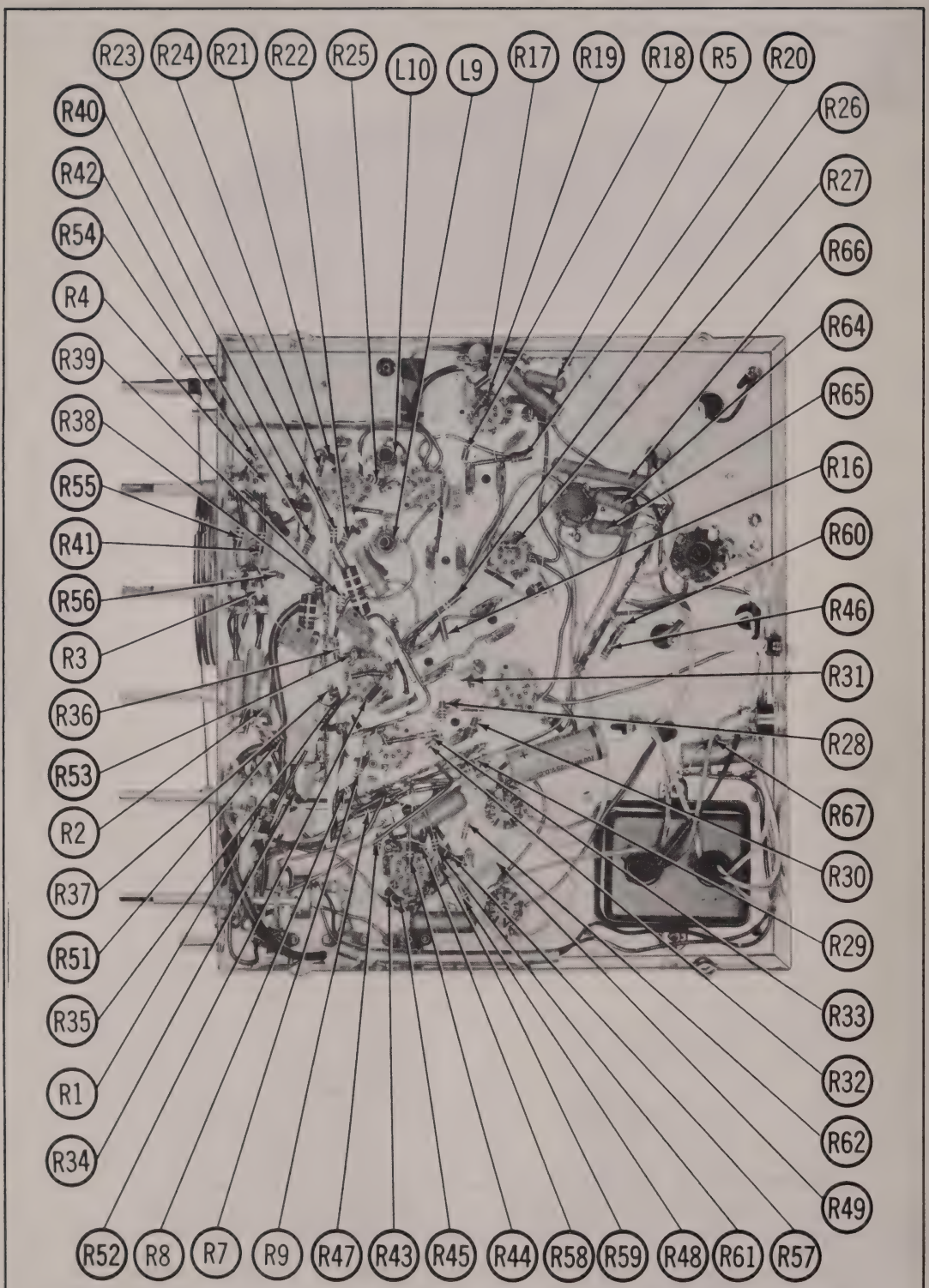
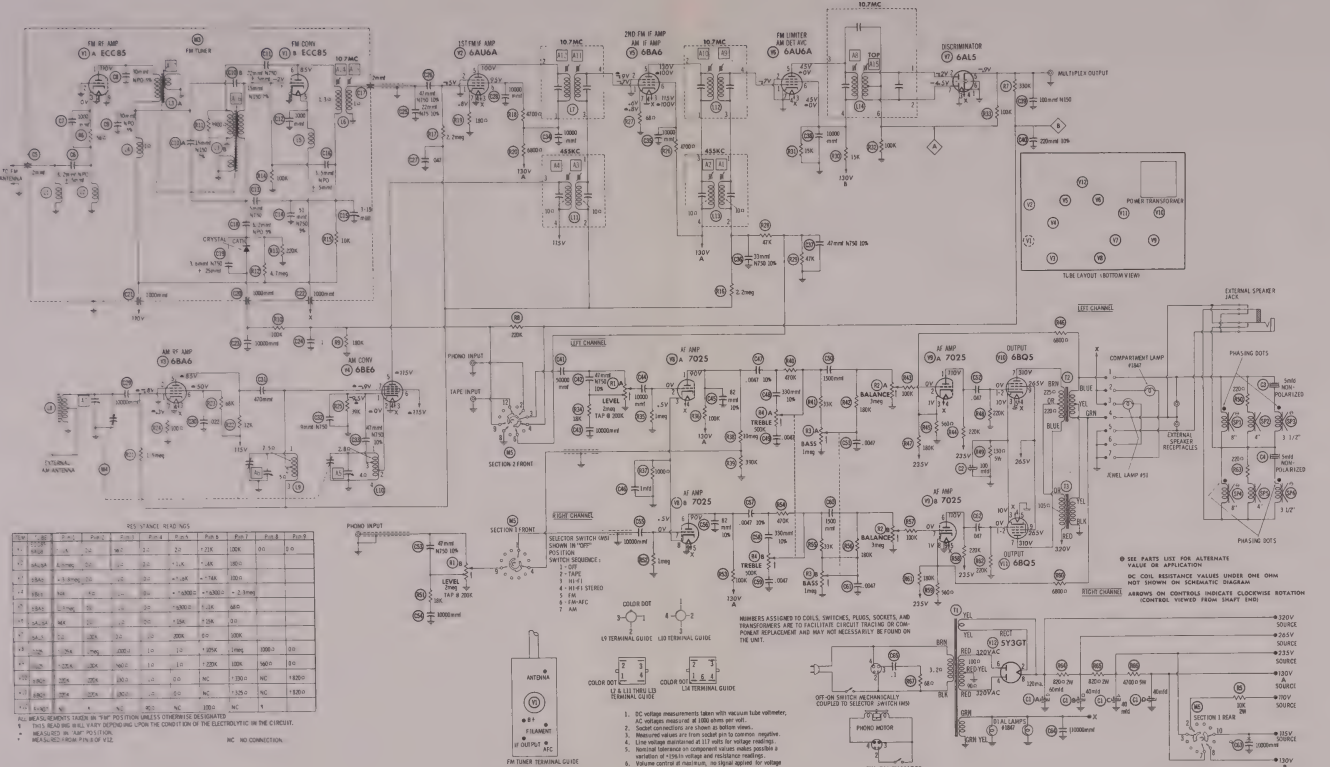
SET 487 FOLDER 15



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION


FM RF AMP V1 A ECC85
FM CONV V1 B ECC85
FM TUNER
10.7MC
1ST FM IF AMP V5 6AU6A
2ND FM IF AMP AM IF AMP V5 6BA6
FM LIMITER AM DET AVC V6 6AU6A
DISCRIMINATOR V7 6AL5
MULTIPLEX OUTPUT
455KC
POWER TRANSFORMER
TUBE LAYOUT (BOTTOM VIEW)
AM RF AMP V3 6BA6
AM CONV V4 6BE6
EXTERNAL AM ANTENNA
CRYSTAL CATH
PHONO INPUT
TAPE INPUT
LEFT CHANNEL
AF AMP V8 A 7025
AF AMP V8 B 7025
AF AMP V9 A 7025
AF AMP V9 B 7025
OUTPUT V10 6BQ5
OUTPUT V11 6BQ5
LEVEL 2meg TAP @ 200K
BASS 1meg
TREBLE 500K
BALANCE 3meg
SECTION 2 FRONT
SECTION 1 FRONT
RIGHT CHANNEL
SELECTOR SWITCH (WS) SHOWN IN "OFF" POSITION
SWITCH SEQUENCE:
1 - OFF
2 - TAPE
3 - HI-FI
4 - HI-FI STEREO
5 - FM
6 - FM-AFC
7 - AM
COLOR DOT
L9 TERMINAL GUIDE
L10 TERMINAL GUIDE
L11 & L12 THRU L15 TERMINAL GUIDE
L16 TERMINAL GUIDE
ANTENNA
FILAMENTS
IF OUTPUT
AFC
FM TUNER TERMINAL GUIDE
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING ON COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of +25% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.
ON-OFF SWITCH MECHANICALLY COUPLED TO SELECTOR SWITCH (WS)
PHONO MOTOR
SW ON CHANGER
DUAL LAMPS #1847
SECTION 1 REAR
SECTION 2 REAR
EXTERNAL SPEAKER JACK
PHASING DOTS
COMPARTMENT LAMP #1847
EXTERNAL SPEAKER RECEPTACLES
JEWEL LAMP #51
320V SOURCE
265V SOURCE
235V SOURCE
130V A SOURCE
70V SOURCE
35V SOURCE
130V B SOURCE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

Tube	Type	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	0	1.2	90	0	1.2	2.2	*.21K	100K	0	0
V2	6AU6A	6.3 ohms	0	0	0	2.0	* 1.4K	* 1.4K	180 Ω		
V3	6BA6	6.3 ohms	0	0	0	2.0	* 1.4K	* 1.4K	100 Ω		
V4	6BE6	6.3 ohms	90	0	0	2.0	* 1.4K	* 1.4K	100 Ω		
V5	6BA6	6.3 ohms	0	0	0	2.0	* 1.4K	* 1.4K	100 Ω		
V6	6AU6A	6.3 ohms	0	0	0	2.0	* 1.4K	* 1.4K	100 Ω		
V7	6AL5	N/A	0	0	0	0	* 25K	* 25K	0 Ω		
V8	7025	6.3	0	0	0	0	200K	0	100K		
V9	7025	6.3	0	0	0	0	200K	0	100K		
V10	6BQ5	6.3	0	0	0	0	220K	0	220K	0	0
V11	6BQ5	6.3	0	0	0	0	220K	0	220K	0	0
V12	5Y3GT	0	0	0	0	0	0	0	0	0	0
V13	6BQ5	6.3	0	0	0	0	220K	0	220K	0	0
V14	6BQ5	6.3	0	0	0	0	220K	0	220K	0	0

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
* THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• MEASURED IN "AM" POSITION.
MEASURED FROM PIN 8 OF V12.
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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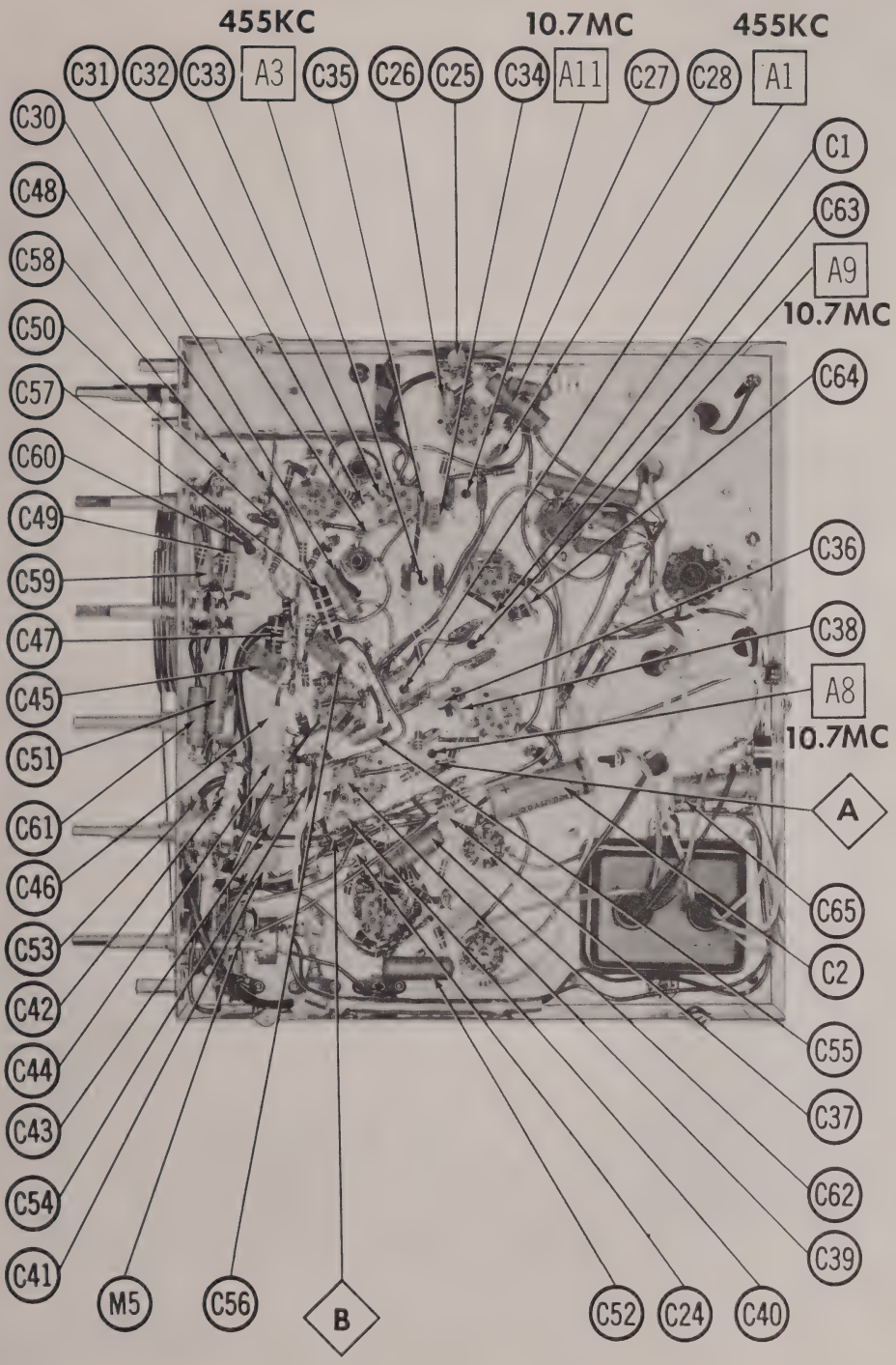
TRUETONE MODELS
4DC5936A, 4DC5937A, 4DC5938A



CHASSIS BOTTOM VIEW - ALIGN., CAP. & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication on VTVM.

Suggested Alignment Tools:

A1 thru A4.....	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532
A5, A6, A7.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8 thru A12, A15.....	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A13, A14.....	GENERAL CEMENT #9296, 9297 WALSCO #2546, 2547

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1620KC	"	"	A5	"
3.	Loop	1400KC	Tune to 1400KC Signal	"	A6, A7	Adjust for maximum output while rocking tuning gang.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .001mfd to pin 7 (grid) of FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) High end stop.	DC probe thru 1meg to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum deflection.
5.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .001mfd to pin 7 (grid) of FM Converter. Low side to chassis.	10.7MC (450KC Swp)	(FM) High end stop.	Vert. amp. thru 27K to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum gain and symmetry of response similar to Fig. 1.
5.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Across FM antenna terminals.	95MC (Unmod.)	(FM) 95MC	DC probe thru 1meg to point Ⓐ. Common to chassis.	A16, A17	Adjust for maximum deflection.

FIG. 1

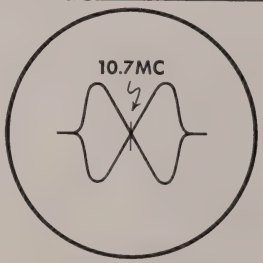


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS •	GENERAL ELECTRIC •	RAYTHEON •	SYLVANIA •

ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	ECC85/6AQ8
V2	1st FM IF Amplifier	6AU6A
V3	AM RF Amplifier	6BA6
V4	AM Converter	6BE6
V5	2nd FM IF Amp. - AM IF Amp.	6BA6
V6	FM Limiter-AM Det.-AVC	6AU6A
V7	Discriminator	6AL5
V8	Left Channel AF Amp- Right Channel AF Amp.	7025
V9	Left Channel AF Amp- Right Channel AF Amp.	7025
V10	Left Channel Output	6BQ5
V11	Right Channel Output	6BQ5
V12	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▬60	400	45X450	AFH4-18-45	CO350	FP377	TMT40	TVL-3787	
B	■40	400			BR6045	TC795	TD-80-450	TVA-1714	
C	▲40	400							
D	40	400							
C2	100	25	45X449	PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	
C3	5	10NP	45X426	NP-PRS7550	BBR10-25 †	TCN105		TVAS-1110 *	
C4	5	10NP	45X426	NP-PRS7550	BBR10-25 †	TCN105		TVAS-1110 *	

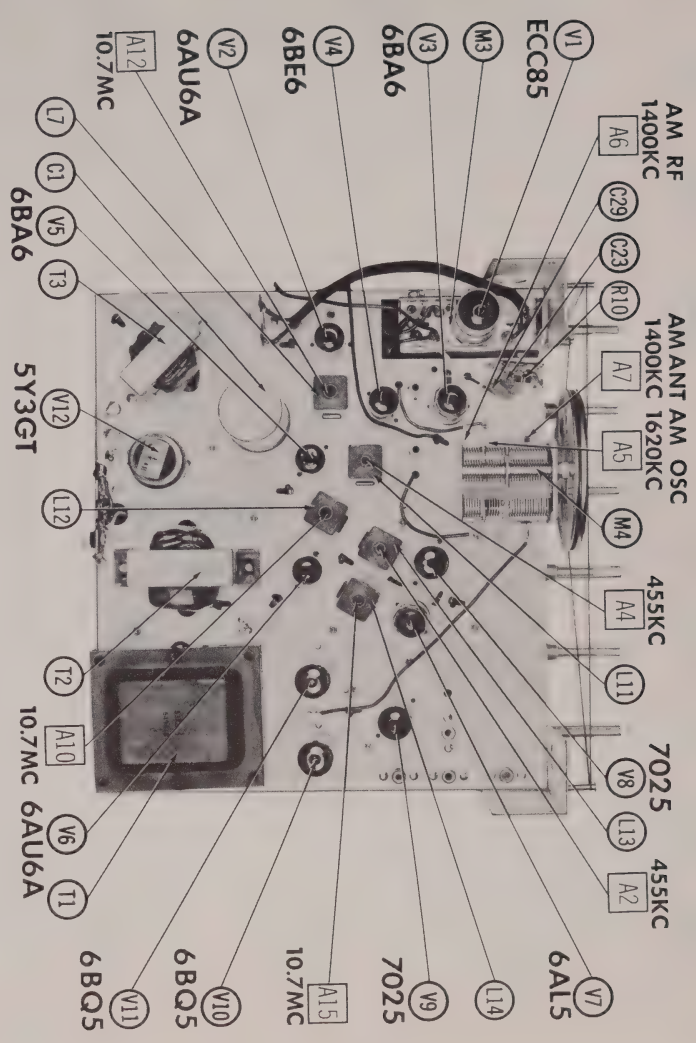
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	2	#13M-015						
C6	8.2 NPO ±.5mmf		NPO-DI 8.2		C10V82C			10TCC-V82
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C8	30 NPO 5%			TCZ-30	C10Q3C	CCTO-300	CNO-433	10TCC-Q30
C9	30 NPO 5%			TCZ-30	C10Q3C	CCTO-300	CNO-433	10TCC-Q30
C10A	15 N150 7½	#13L8PG150N2				*		10TCP-Q15
B	15 N150 7½					*		10TCP-Q15
C11	22 N750 ±.5mmf			DTN-22	C10Q22U		CN7-422	10TCU-Q22
C12	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C13	5 N750			DTN-5	C10V5U	CCTN-050	CN7-550	10TCU-V5
C14	51 N750 5%			TCN-51	C10Q51U			
C15	3-15	#19B-902-5						
C16	3.5 NPO ±.25mmf		NPO-DI 3.3	DTZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C17	2	#13M-015						
C18	8.2 NPO 5%		NPO-DI 8.2		C10V82C			10TCC-V82
C19	3.6 N750 ±.25mmf	#13L8UJ3R6						10TCU-V33
C20	1000		EF-001	MFT-1000		CCF-102	CT280A	
C21	1000		EF-001	MFT-1000		CCF-102	CT280A	
C22	1000		EF-001	MFT-1000		CCF-102	CT280A	
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C24	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C25	22 N75 10%	#80X32						
C26	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C27	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C30	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-2122	2TM-S22
C31	470		BPD-00047	DD-471	BYA10T47	CCD-470	GP347	10TS-T47
C32	9 N750		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C33	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C34	1000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C36	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C37	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C39	100 N150	#80X8				*		10TCP-T10
C40	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C41	50000		BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C42	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C45	82 10%		1469-000082	TCZ-82	22R5Q82	CM-20B-820K	CNO-482	MS-482
C46	1mfd 100V		P288N-1.0		CUB2W1		GEM-21	2TM-M1
C47	.0047 400V 10%		V84C4D47-10%		PM6D47	6DP-1-472	JL-247	6TM-D47
C48	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C49	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C50	1500		SI 1500	D6-152	BYA10D15	CCD-152	GP215	5HK-D15
C51	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C52	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C53	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C54	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C55	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C56	82 10%		1469-000082	TCZ-82	22R5Q82	CM-20B-820K	CNO-482	MS-482
C57	.0047 400V 10%		V84C4D47-10%		PM6D47	6DP-1-472	JL-247	6TM-D47
C58	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C59	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C60	1500		SI 1500	D6-152	BYA10D15	CCD-152	GP215	5HK-D15
C61	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C62	.047 400V		P488N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	4TM-S47
C63	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C64	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C65	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

Note 1. Not used in some versions.
Truetone Part Number.
* Not normally found in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	1/2	36X425					Level, Right Channel
	200K Tap							
B	2meg	1/2						Level, Left Channel
	200K Tap							
R2A	3meg	1/2	36X421					Balance, Left Channel
B	3meg	1/2						Balance, Right Channel
R3A	1meg	1/2	36X422	B-70	AD47-1meg-Z		FA16A	Bass, Right Channel
B	1meg	1/2		SR-70	Not Req.		RU16A	Bass, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R4A	500K	1/2	36X420	B-60	AD47-500K-Z		FA55A	Treble, Right Channel
B	500K	1/2		SR-60	Not Req.		RU55A	Treble, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	10K 2W	
R6	56Ω	
R7	330K	
R8	220K	
R9	180K	
R10	100K	
R11	3900Ω	
R12	4.7meg	
R13	220K	
R14	100K	
R15	10K	
R16	2.2meg	
R17	2.2meg	
R18	4700Ω	
R19	180Ω	
R20	6800Ω	
R21	1.5meg	
R22	12K	
R23	68K	
R24	100Ω	
R25	39K	

ITEM No.	RATING	REMARKS
R26	4700Ω	
R27	68Ω	
R28	47K	
R29	47K	
R30	15K	
R31	15K	
R32	100K	
R33	100K	
R34	18K	
R35	1meg	
R36	100K	
R37	1000Ω	
R38	10meg	
R39	390K	
R40	470K	
R41	33K	
R42	180K	
R43	100K	
R44	220K	
R45	560Ω	
R46	6800Ω	

ITEM No.	RATING	REMARKS
R47	180K	
R48	220K	
R49	130Ω 5W	#43X396
R50	220Ω	
R51	18K	
R52	1meg	
R53	100K	
R54	470K	
R55	33K	
R56	180K	
R57	100K	
R58	220K	
R59	560Ω	
R60	6800Ω	
R61	180K	
R62	220K	
R63	220Ω	
R64	820Ω 2W	
R65	820Ω 2W	
R66	4700Ω 5W	#43X345
R67	68Ω	

Truetone Part Number.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		TRUETONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil	34A-1002						
L2	Cathode Choke	34A-1002-01						
L3A	FM RF Coil	34A-1006						
B	FM Osc. Coil							
L4	RF Choke	31T-2081	19-1005	19-1005	BC-566	4612		9.5uh
L5	Fil. Choke	34A-575						
L6	1st FM IF Trans.	31U-618						
L7	2nd FM IF Trans.	9A2440	16-3487	16-3487	FM-254	1463		
L8	Loopstick	9A2412			BC-418			
L9	AM Mixer Coil	9A2456						
L10	AM Osc. Coil	9A2455						
L11	1st AM IF Trans.	9A2443	16-6758	16-6758	BC-352	12-C1	RF-1	
L12	3rd FM IF Trans.	9A2440	16-3487	16-3487	FM-254	1463		
L13	2nd AM IF Trans.	9A2443	16-6758	16-6758	BC-353	12-C2	RF-2	
L14	Discriminator	9A2450	17-3494	17-3494	FM-253	1464		

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .9A	640 VCT @.120A	5V@ 2A	53X385	22R06			PM-8422 ①	22R06	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @4.3A									

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	3300Ω CT	6-8Ω CT	51X211				A-3876①			① Drill new mounting holes.
T3	1900Ω	3-4Ω	51X212							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	8"	PM	6-8Ω	12A570 ①	8A31Z7, 9	① Some versions may use a 12" in this application.
SP2	4"	PM	3-4Ω	12A543	4A07	② Some versions may use a 5" in this application.
SP3	3½"	PM	3-4Ω	12A571A ②	3A15T	
SP4	8"	PM	6-8Ω	12A570 ①	8A31Z7, 9	
SP5	4"	PM	3-4Ω	12A543	4A07	
SP6	3½"	PM	3-4Ω	12A571A ②	3A15T	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	TRUETONE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1		13TB	Not Req.	26S	S1-1 S3-3			8TA4-S	N-8TAS

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS	
	TRUETONE PART No.	CLEVITE WALCO PART No.	JENSEN PART No.		
M2		W-103STSS † or W-103STDS ♦	S-69X † or S-69XSD †♦ or S-69XDD ♦	† Jewel	♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	FM Tuner	25A1190	Complete
M4	Tuning Cap.	14A237	3 Gang (Ant. 39—515mmf, RF 12—204mmf, Osc 13—80mmf)
M5	Switch	2A517	Function

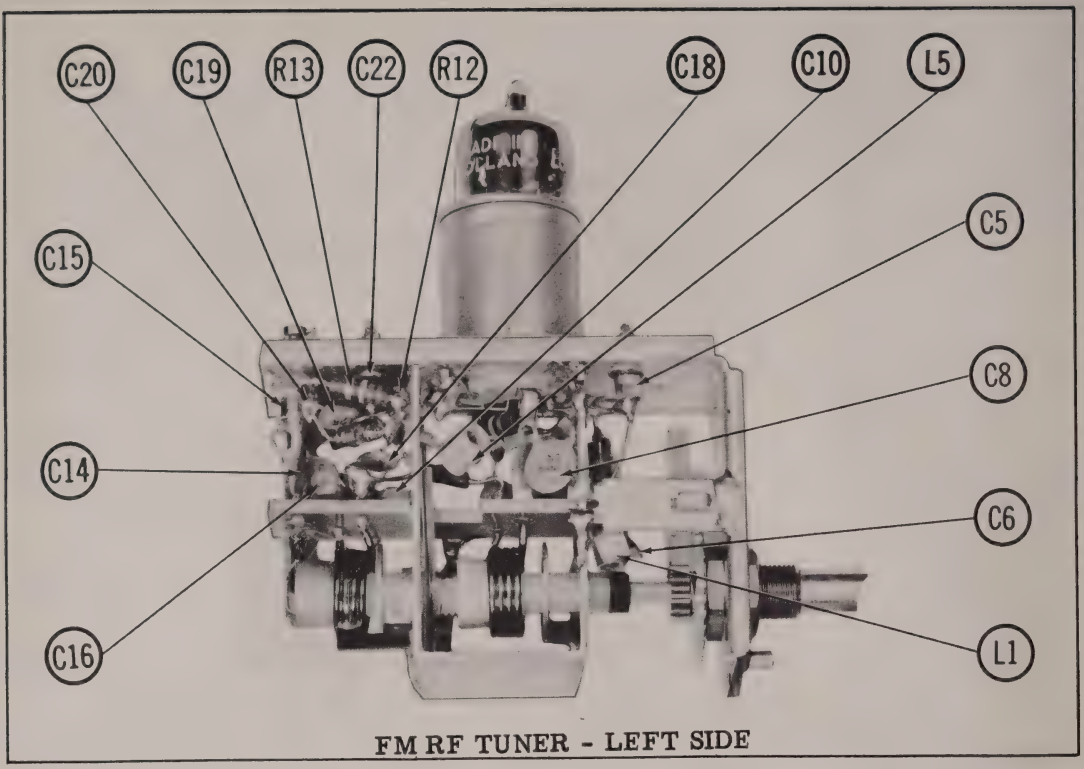
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

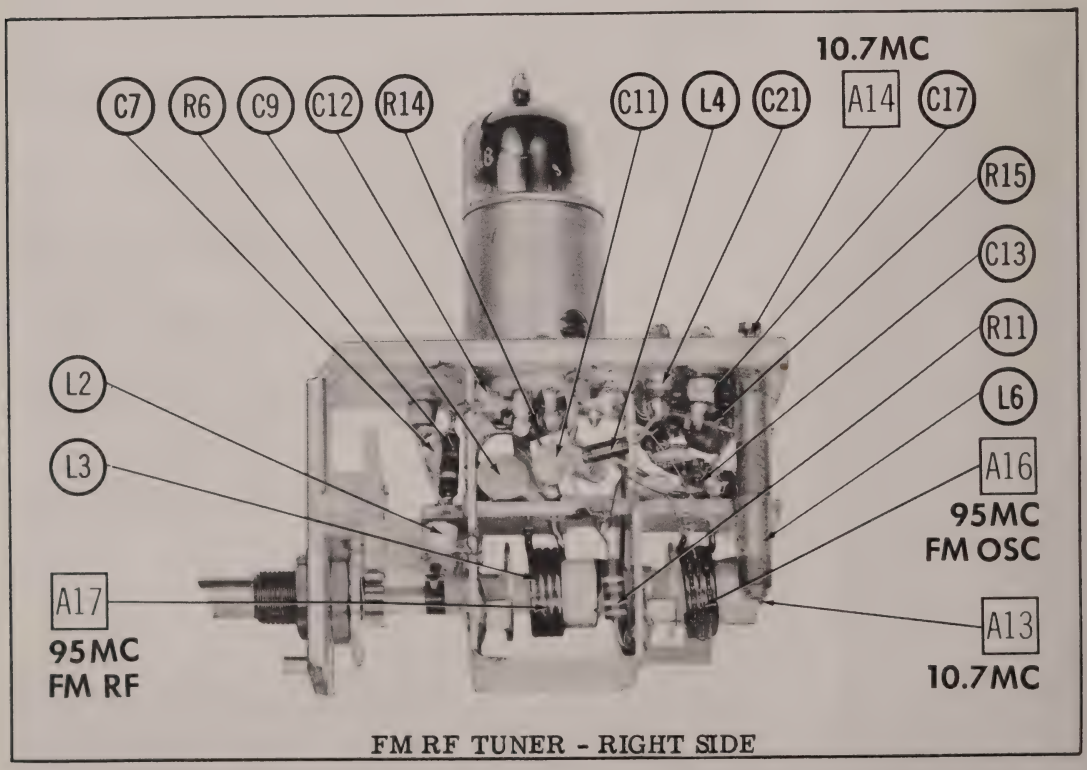
NAME	PART NO.	DESCRIPTION
Knob	10A959-1	
Dial Glass		Order By Complete Model Number
Pointer		Order By Complete Model Number

WIRING DATA

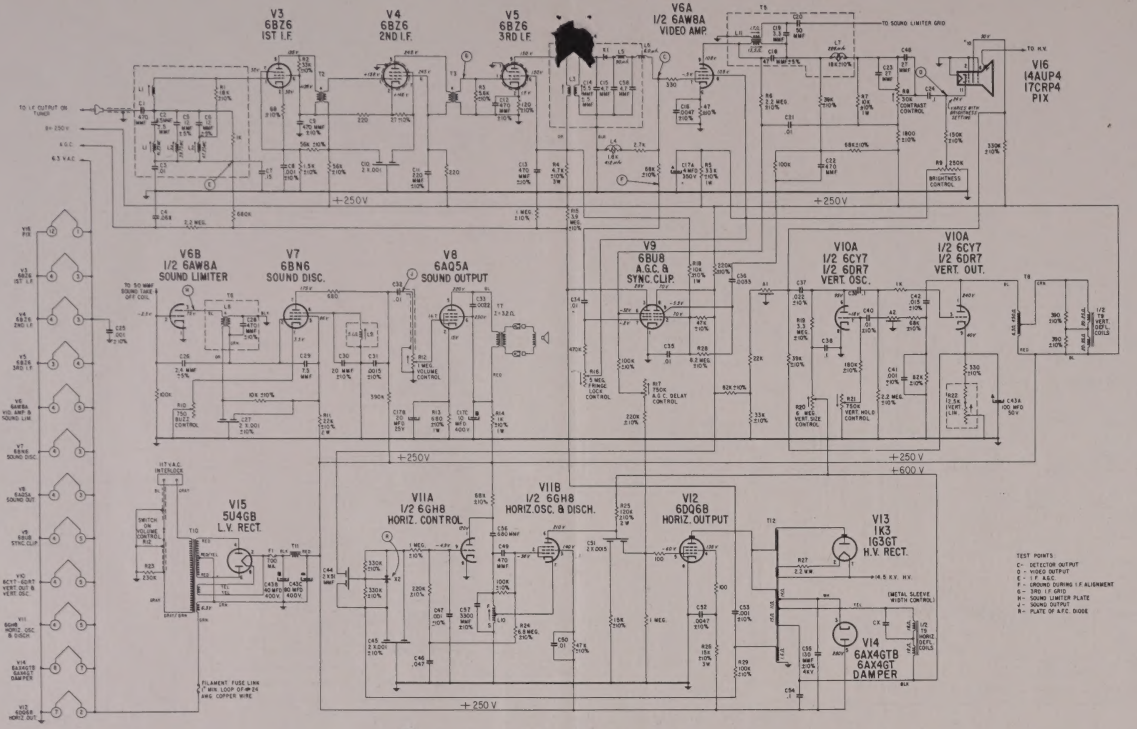
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



FM RF TUNER - LEFT SIDE



FM RF TUNER - RIGHT SIDE


V3 6BZ6 1ST I.F.
V4 6BZ6 2ND I.F.
V5 6BZ6 3RD I.F.
V6A 1/2 6AW8A VIDEO AMP.
V16 I4AUP4 I7CRP4 PIX
V6B 1/2 6AW8A SOUND LIMITER
V7 6BN6 SOUND DISC.
V8 6AQ5A SOUND OUTPUT
V9 6BU8 A.G.C. & SYNC CLIP.
V10A 1/2 6CY7 1/2 6DR7 VERT. OSC.
V10A 1/2 6CY7 1/2 6DR7 VERT. OUT.
V15 5U4GB L.V. RECT.
V11A 1/2 6GH8 HORIZ. CONTROL
V11B 1/2 6GH8 HORIZ. OSC. & DISC.
V12 6DQ6B HORIZ. OUTPUT
V13 1K3 1G3GT H.V. RECT.
V14 6AX4GTB 6AX4GT DAMPER
+250V
+600 V
TEST POINTS
C- DETECTOR OUTPUT
D - VIDEO OUTPUT
E - I.F. A.G.C.
F - GROUND DURING I.F. ALIGNMENT
G - 3RD. I.F. GRID
H - SOUND LIMITER PLATE
J - SOUND OUTPUT
R - PLATE OF A.F.C. DIODE
NOTES:
ALL VOLTAGES MEASURED FROM CHASSIS TO POINTS INDICATED.
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
ALL D.C. VOLTAGES TO BE MEASURED WITH A VACUUM TUBE VOLTMETER HAVING 11 MEGOHM INPUT RESISTANCE.
ALL VOLTAGE MEASUREMENTS TO BE MADE WITH NO SIGNAL PRESENT. NORMAL SETTING OF CONTROLS AND CHANNEL SELECTOR SET TO CHANNEL 2 UNLESS OTHERWISE SPECIFIED.
ALL CONDENSER VALUES IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
ALL CONDENSER CAPACITY TOLERANCE +20% UNLESS OTHERWISE SPECIFIED.
ALL RESISTORS ARE 1/2 WATT, 10% TOLERANCE, CARBON, 1/2 WATT UNLESS OTHERWISE SPECIFIED.
RESISTANCE MEASUREMENTS SHOWN WITH COILS DISCONNECTED FROM CIRCUIT.
COIL RESISTANCES NOT GIVEN ARE UNDER ONE OHM.
CATHODE RAY TUBE 2ND ANODE VOLTAGE TO BE MEASURED WITH ELECTROSTATIC 20 000 MEG. OHM PER VOLT HIGH VOLTAGE METER.
ARROWS ON POTENTIOMETERS INDICATE CLOCKWISE ROTATION.
(A) ALIGNMENT POINTS
CIRCLED LETTERS INDICATE ALIGNMENT AND TEST POINTS
CHASSIS

ZENITH MODELS E1416G, GU, E1801B, BU, L, LU, E1803C, CU, L, LU (CH. 16E20, U)

Schematic Diagram Courtesy of Zenith Radio Corporation

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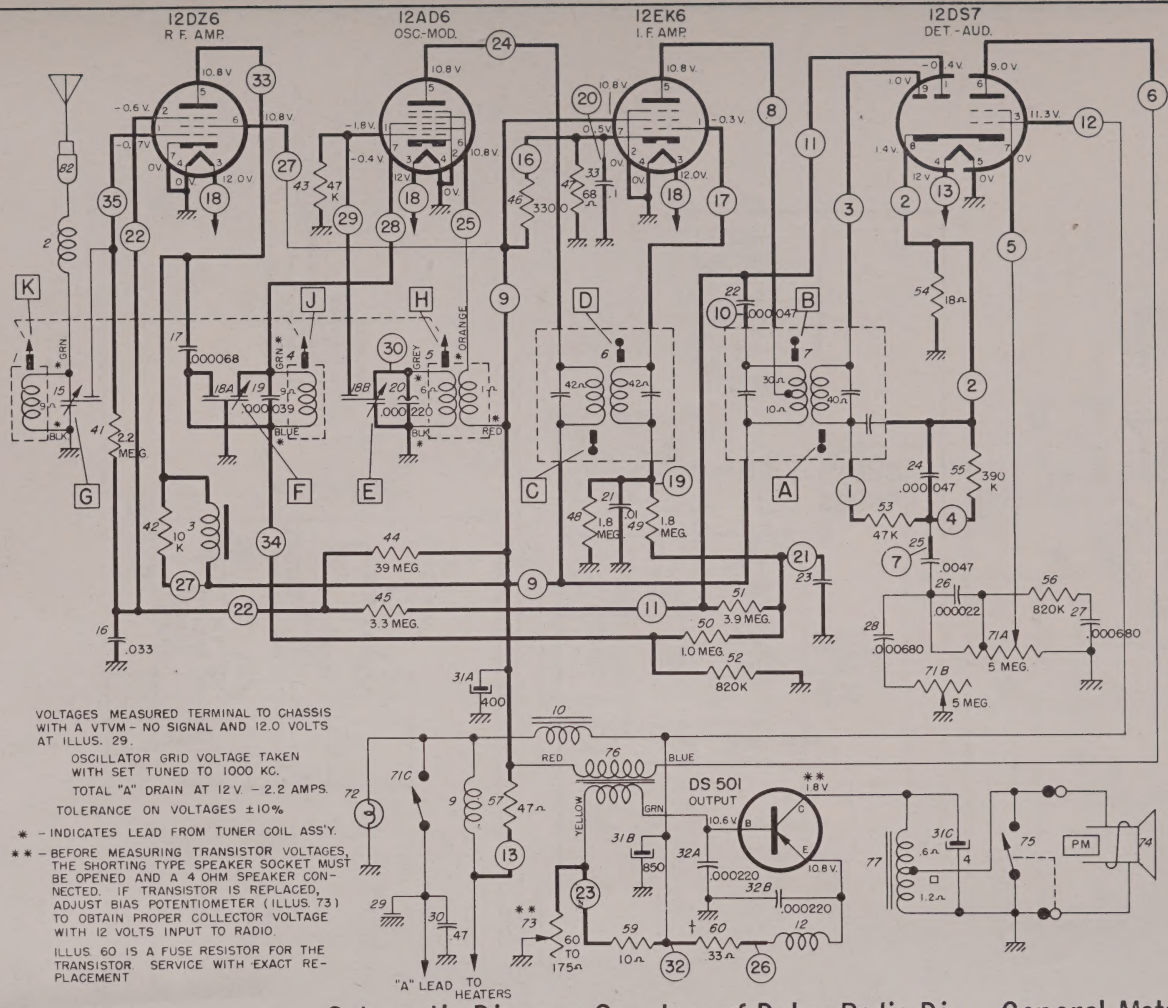
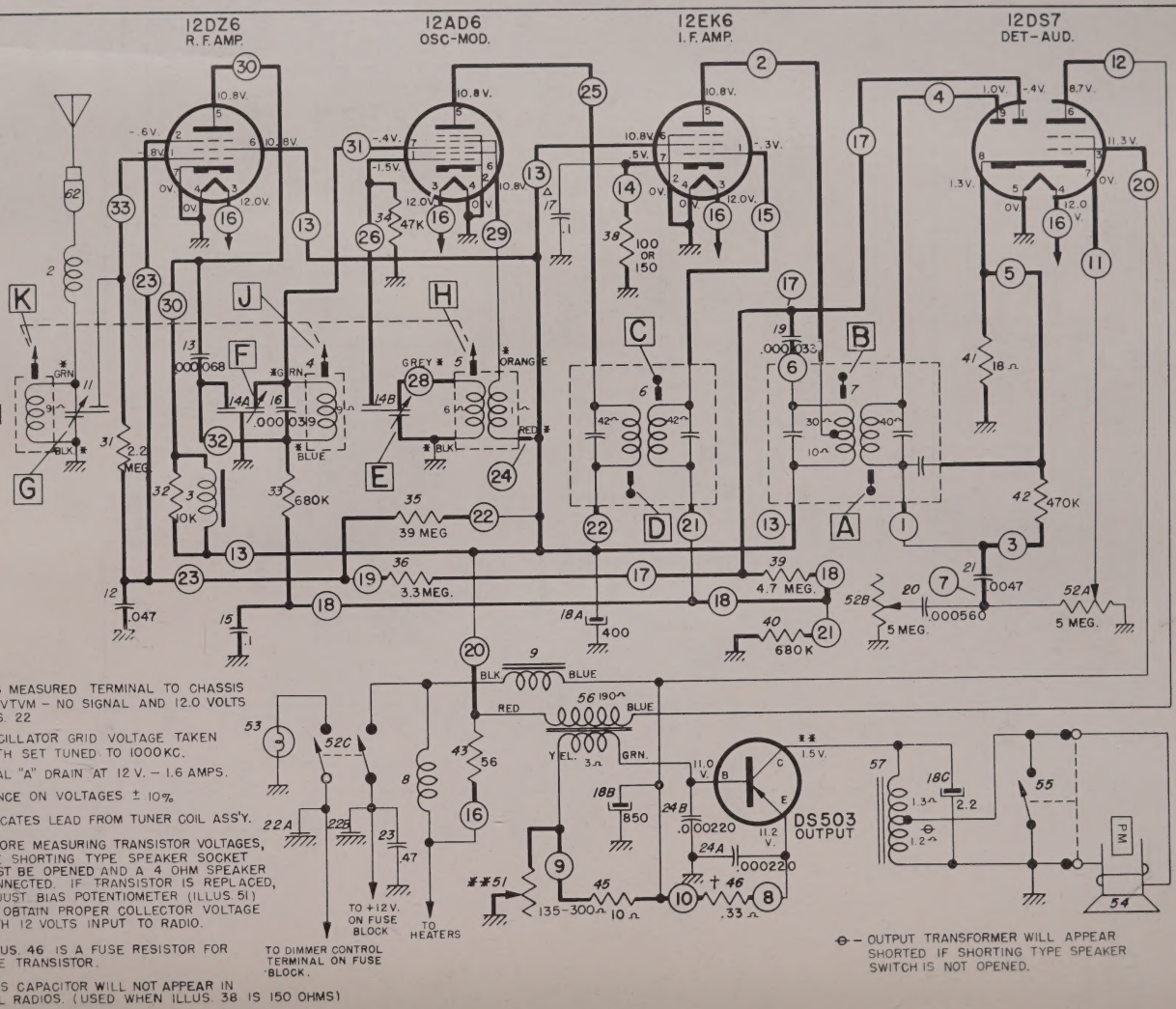
STUDEBAKER MODEL AC-2978


12DZ6
R.F. AMP.
12AD6
OSC-MOD.
12EK6
I.F. AMP.
12DS7
DET-AUD.
DS 501
OUTPUT
"A" LEAD TO HEATERS
VOLTAGES MEASURED TERMINAL TO CHASSIS WITH A VTVM - NO SIGNAL AND 12.0 VOLTS AT ILLUS. 29.
OSCILLATOR GRID VOLTAGE TAKEN WITH SET TUNED TO 1000 KC.
TOTAL "A" DRAIN AT 12 V. - 2.2 AMPS.
TOLERANCE ON VOLTAGES ±10%
* - INDICATES LEAD FROM TUNER COIL ASS'Y.
** - BEFORE MEASURING TRANSISTOR VOLTAGES, THE SHORTING TYPE SPEAKER SOCKET MUST BE OPENED AND A 4 OHM SPEAKER CONNECTED. IF TRANSISTOR IS REPLACED, ADJUST BIAS POTENTIOMETER (ILLUS. 73) TO OBTAIN PROPER COLLECTOR VOLTAGE WITH 12 VOLTS INPUT TO RADIO.
ILLUS. 60 IS A FUSE RESISTOR FOR THE TRANSISTOR. SERVICE WITH EXACT REPLACEMENT

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.

CHEVROLET MODEL 988275



VOLTAGES MEASURED TERMINAL TO CHASSIS WITH A VTVM – NO SIGNAL AND 12.0 VOLTS AT ILLUS. 22

OSCILLATOR GRID VOLTAGE TAKEN WITH SET TUNED TO 1000 KC.

TOTAL "A" DRAIN AT 12 V. – 1.6 AMPS.

TOLERANCE ON VOLTAGES ± 10%

* – INDICATES LEAD FROM TUNER COIL ASS'Y.

** – BEFORE MEASURING TRANSISTOR VOLTAGES, THE SHORTING TYPE SPEAKER SOCKET MUST BE OPENED AND A 4 OHM SPEAKER CONNECTED. IF TRANSISTOR IS REPLACED, ADJUST BIAS POTENTIOMETER (ILLUS. 51) TO OBTAIN PROPER COLLECTOR VOLTAGE WITH 12 VOLTS INPUT TO RADIO.

† – ILLUS. 46 IS A FUSE RESISTOR FOR THE TRANSISTOR.

Δ – THIS CAPACITOR WILL NOT APPEAR IN ALL RADIOS. (USED WHEN ILLUS. 38 IS 150 OHMS)

⊖ – OUTPUT TRANSFORMER WILL APPEAR SHORTED IF SHORTING TYPE SPEAKER SWITCH IS NOT OPENED.

Schematic Diagram Courtesy of Delco Radio Div., General Motors Corp.